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A REVISION OF THE GENUS PSEUDISOBRACHIUM IN
NORTH AND CENTRAL AMERICA
(HYMENOPTERA, BETHYLIDAE)

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No. 2 — *A Revision of the Genus Pseudisobrachium in North and Central America (Hymenoptera, Bethyridae)*

BY HOWARD E. EVANS

INTRODUCTION

The bethyrid genus *Pseudisobrachium* contains approximately 100 known species, about four-fifths of which occur in the Western Hemisphere and about two-fifths of which are described for the first time in the present revision. There are many undescribed Neotropical species, but I have had to omit the West Indies and South America from present treatment because of inadequate material. The genus is well represented in Europe and in Africa, and the species from these continents are closely similar to the American forms. Two species from the Philippines described by Kieffer (1922) represent the only known Oriental species. Although Kieffer (1914) states that the genus occurs in Australia, I have seen no specimens from that continent and the only species described from there, *P. australiensis* Kieffer, was correctly removed to *Propristocera* by Kieffer himself.

The North American species were first treated by Ashmead (1893) under the name *Isobrachium*, a name now properly restricted to an unrelated Palaearctic genus. Ashmead described and presented a key to six species; he apparently had before him about 15-20 specimens. The characters he used now seem unreliable and in some cases are actually incorrect; his sex associations also tended to be capricious. Kieffer (1906) described one species from Nicaragua and a few years later (1914) presented a key to the species of the world, though there is no evidence that he studied much if any North American material. Fouts (1928) described five new species and presented a revised key to species; he apparently had about 15 specimens before him in addition to Ashmead's material.

I first became interested in the genus about ten years ago and began slowly to gather material. It quickly became apparent that the genus was a large and difficult one and that the existing literature was completely inadequate. The present revision, although based on about 1400 specimens, pretends to be no more than a very preliminary treatment of the genus. Reliable species characters have been more difficult to find than, for example, in the related genera *Dissomphalus* and *Propristocera*, and much difficulty has been encountered in associating the sexes properly.

Nevertheless, I do feel that the revision represents a sufficient advance over earlier work to justify my publishing it at this time.

There are those who question the value of taxonomic studies on a strictly "alpha" level, as this one admittedly is. I can appreciate their arguments and I readily admit that the species of the alpha taxonomist are no more than hypothetical entities. Only more sophisticated studies, involving not only careful, statistically analyzed inventories of the structure of properly sampled populations, but also comparative studies of physiology and behavior, can establish with certainty how a complex of organisms ought properly to be classified. But such studies must have a beginning. *Pseudisobrachium* has been, until recently, like a vaguely plotted continent on an explorer's map. The present study is no more than a beach-head on that continent, but it may perform the important function of serving as a base for further operations.

ACKNOWLEDGMENTS AND SOURCES OF MATERIAL

Pseudisobrachium is poorly represented in the collections of most museums, the sole exception being the U. S. National Museum. However, by gathering material from many sources I have been able to amass enough material for this preliminary study. I am particularly indebted to Karl V. Krombein and Henry K. Townes for making available the valuable material in their personal collections. A. T. McClay, at Davis, California, M. Wasbauer, at Sacramento, California, and Mrs. L. K. Gloyd, at Urbana, Illinois, have provided me with excellent series of certain species taken from light trap collections. My own collecting has enabled me to fill in many gaps. A trip to Mexico during the summer of 1951 was supported by the American Philosophical Society, and a second trip to Mexico and the southwestern United States during 1959 was made possible by a fellowship from the John Simon Guggenheim Memorial Foundation. Additional specimens were collected during several trips to the southern states supported by the National Science Foundation for studies on the behavior of digger wasps.

The following list of institutions and individuals is meant to serve as an acknowledgment to each, as well as an indication of the abbreviation by which each is designated in the text:

Academy of Natural Sciences of Philadelphia (ANSP)

American Museum of Natural History, New York (AMNH)

California Academy of Sciences, San Francisco (CAS)
California Dept. of Agriculture, Sacramento (CDAS)
California Insect Survey, Berkeley (CIS)
Canadian National Collections, Ottawa (CNC)
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Museum of Comparative Zoology, Cambridge, Mass. (MCZ)
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University of Arizona, Tucson (UA)
University of California, Davis (UCD)
United States National Museum, Washington, D.C. (USNM)

BIOLOGY OF THE GENUS

Pseudisobrachium is properly placed as one of the more specialized genera of the tribe Pristocerini. The most closely related genus in the Americas is probably *Propristocera*, a genus in which the males lack a transverse carina margining the propodeal disc behind, as in *Pseudisobrachium*. It is somewhat more distantly related to *Pristocera*, *Cleistepyris*, and *Dissomphalus*. *Pluto-Parisobrachium* Kieffer I regard as synonyms of *Pseudisobrachium* (see further discussions under generic diagnosis below).

It must be admitted regrettably that Ashmead's 1893 statement regarding the biology of the genus cannot yet be improved upon. In Ashmead's words, "the genus is found associated with various ants; it may be parasitic upon the ants, or upon the myrmecophilous Coleoptera so frequently found in their nests." There are now many more records of females being taken with ants than there were in Ashmead's time (see list below), but the precise relationship remains to be determined. It should be noted that the species of *Pristocera* attack coleopterous larvae, and there is some evidence that the species of *Dissomphalus* do also. Unfortunately, nothing is known of the biology of other genera of Pristocerini. It is, of course, entirely possible that

Pseudisobrachium has switched from coleopterous to formicid larvae, possibly by way of myrmecophilous forms. There is now strong circumstantial evidence that members of this genus do in fact attack ant larvae (see especially remarks under *P. arcuarium* below). This may account for the great success of the genus as compared to most other genera of the tribe. Females are also sometimes taken in Berlese samples of soil or leaf litter, presumably because the sample includes a portion of an ant nest. I have also seen an occasional female from light trap collections, suggesting that females may sometimes leave the soil during the night.

A perusal of the list presented below shows that female *Pseudisobrachium* have been taken with ants of several subfamilies (Formicinae, Dolichoderinae, Myrmicinae, Dorylinae, Ponerinae). Where there are several records for one species, in most cases that species appears to be associated with several genera, sometimes of more than one subfamily. For example, *prolongatum* has been taken with the formicine genera *Camponotus*, *Acanthomyops*, and *Formica*, as well as the myrmicine genus *Aphaenogaster*. The closely related *arcuarium* is recorded with the ponerine genera *Proceratium* and *Stigmatomma*. *P. ashmeadi* has been taken with the genera *Formica* and *Acanthomyops* (Formicinae) and *Tapinoma* (Dolichoderinae). While Formicinae have been taken with three of six Nearctic species, none of the exotic species has yet been taken with ants of this subfamily.

Since the females are never taken by routine collecting methods, they are rare in collections. Males are much more frequently encountered. Males of some species are diurnal and often taken by sweeping low vegetation either in forests or in open country. I have taken them on honeydew only rarely, and know of only one or two records of them having been taken on flowers. Males of certain other species appear to fly either by day or in the evening, while many species, especially those characteristic of arid country, are fully nocturnal. Nocturnal species tend to have larger eyes and ocelli and are often paler in color (especially the wings). However, some forms with small eyes and ocelli have been taken only at night. Many species exhibit considerable variation in color, eye size, and ocellar size, and it is possible that some of this variation is associated with ecological conditions and the time of flight of local populations. The majority of males of this genus in collections have been taken at light.

Most of the South American and Palaearctic males I have seen are dark in color and have relatively small ocelli, and I am not aware of reports that these species are nocturnal. The evolution of numerous nocturnal species seems to be especially characteristic of desert regions of North America, somewhat paralleling the development of the brachycistidine Tiphidae.

Further comment is perhaps in order on the difficulty in associating sexes in this genus. Of the North American species, the sexes of only two (*prolongatum* and *rufiventre*) have been associated with any degree of certainty. Theoretically, one should be able to collect males in numbers in certain situations, then search the ant nests of that area diligently for females; having found a female, one ought to be able to place her in an open container in the field and capture the males as they are attracted to her. I have actually given a good deal of thought and time to this scheme, but with completely negative results. On one occasion, I collected 67 male *prolongatum* on a small wooded hillock within a few hours (Plummer's Island, Maryland, Sept. 23, 1960). However, a very careful search of all the ant nests I could find in the area revealed no females. Of course, in the late summer (when male *Pseudisobrachium* are on the wing in the Northeast), most ant nests contain little brood. It is entirely possible that both sexes emerge in the fall and mate and that the females overwinter but do not enter ant nests until spring, when ant colonies are growing and contain much brood. The majority of females which have been taken in ant nests have been taken in the spring or early summer.

RECORDS OF PSEUDISOBRACHIUM TAKEN WITH ANTS¹

Nearctic Species

P. arenarium Evans.² Specimen from St. Charles, Mo., 1949 (M. Talbot), labeled "in vial with *Stig[matomma] pallipes*" (Ponerinae) [USNM]. Specimen from Philadelphia, Pa., 20 May 1939 (W. L. Brown), labeled "from nest of *Proceratium* sp." (Ponerinae) [USNM]. Dr. Brown has written me that this specimen was taken in Wissahickon Park with *Proceratium silaceum* (Roger). The nest was under a rock in deciduous

¹All records involve female *Pseudisobrachium* except for one Oriental record which is noted otherwise.

²These species are described in the text from the male sex, and in each case the sex association is tentative.

woods; there were 13 adult ants in the nest, 11 workers and 2 ergatoid females. The *Pseudisobrachium* was in the middle of the nest with brood in a space less than one inch in diameter. There were no myrmecophilous beetles in this nest and in fact both this ant and *Stigmatomma pallipes* are not known to harbor such beetles.

- P. ashmeadi* Evans.² Specimen from Arlington, Mass., 24 May 1953 (W. L. Brown), labeled "*Formica fusca* nest in woods" [MCZ]. Specimen from Forest Hills, Mass., 4 May 1915 (W. M. Mann), with two *Tapinoma sessile* (Say) [det. W. L. Brown] on card point on same pin [USNM]. Specimen from Forest Hills, Mass. (no date) (W. M. Mann) with *Acanthomyops claviger* (Roger) on card point on same pin [USNM]. *Tapinoma* belongs to the Dolichoderinae, the other two genera to the Formicinae.
- P. occidentale* Evans.² Specimen from Stanford Univ., Calif., 13 Feb. 1910, with a worker and dealate queen *Tapinoma sessile* (Say) [det. W. L. Brown] on card point on same pin (Dolichoderinae) [USNM].
- P. prolongatum* (Provancher) (= *mandibulare* Ashmead, *montanum* Ashmead, *myrmecophilum* Ashmead). Ashmead (1893) records *mandibulare* from a nest of *Camponotus pennsylvanicus*, 27 May 1883 (T. Pergande); this specimen is in the USNM, from Washington, D. C., bearing a note to that effect. A second specimen in the USNM, from Washington, D. C., 19 Aug., is pinned with two specimens of *Camponotus nearcticus* Emery [det. W. L. Brown]. The type of *mandibulare*, from Retreat, Haywood Co., N. C. [USNM] is pinned with a worker *Aphaenogaster fulva* Roger (Myrmicinae). Ashmead (1893) also recorded *myrmecophilum* from nests of *Formica rufibarbis* at Helena, Mont., and *montanum* from nests of this ant at Assiniboine, Mont. (both H. G. Hubbard); the ant associated with the specimen from the latter locality has been identified as *Formica cinerea* Mayr by W. L. Brown. Ashmead's record of *rufiventre* from Helena, Mont., from a nest of *Formica obscuripes* Forel, also doubtless applies to *prolongatum*. There are two additional specimens in the USNM, both from Forest Hills, Mass., May 1915 (W. M. Mann); one is pinned with a *Formica* of the *pallide-fulva* group, the other with *Acanthomyops* sp. (?*claviger* Roger) [det. W. L. Brown]. There are two specimens in the MCZ from Lexington, Mass.,

5 June 1955 (W. L. Brown), one labeled "in nest of *Acanthomyops claviger*," the other labeled "in nest of *Acanthomyops* sp. indet." A specimen from Walsh Co., N. D., 23 June 1950 (W. E. LaBerge) bears the notation "with *Formica* sp."

P. flaviventre (Kieffer). Dr. W. L. Brown has sent me a specimen probably belonging to this species which he took at Little Grassy Lake, Williamson Co., Ill., 10 Aug., 1958, in oak-hickory woods, in leaf litter in or near a nest of *Solenopsis* of group *molesta* Say (Myrmecinae). A number of specimens of this species have been taken in soil (see text for data).

P. rufiventre (Ashmead). Ashmead's (1893) record of this species from Montana probably applies to *prolongatum*, as noted under that species. A specimen from Blue Hills, Canton, Mass., 20 July 1956 (W. L. Brown) is labeled "*Formica obscuriventris* Mayr nest under rock" [MCZ].

Neotropical Species

P. merklei Bruch. Bruch (1917b) described this species along with several other myrmecophiles taken near La Plata, Argentina. In his introduction he states: "mencionaré por ahora los insectos de nuestras capturas y que podemos considerar en cierto modo como huéspedes de *Solenopsis saevissima*" (Myrmecinae).

P. solenopsidicola Bruch. Bruch (1917a) described this species "de un nido de *Solenopsis saevissima* Sm. var. *tricuspis* Forel, en la Sierra de la Ventana [Argentina]" (Myrmecinae).

P. terresi Mann. "Described from a single specimen taken in a nest of *Aphaenogaster relictus* at Diquini [Haiti]" (Myrmecinae) (Mann, 1915).

Palearctic Species

P. leptanillae Duchaussoy. Duchaussoy (1916) described this species from "Tunisie, Kairouan, Sousse; trouvé par M. le Dr. Santschi, dans les nids des fourmis du genre *Leptanilla*" (Dorylinae).

P. subcyaneum Haliday (= *cantianum* Chitty). Chitty (1906) took the type of *cantianum* "in nest and runs of *Ponera contracta*," Charing, Kent, England, 3 Aug. 1903. He surmises that *subcyaneum* may attack *Myrmecina latreillei*, (= *M. graminicola* Latr.) but gives no reason for this belief.

Oriental Species

P. sp. A specimen of an apparently undescribed male *Pseudisobrachium* from San Francisco del Monte, Manila, P.I. (R. C. (McGregor) [MCZ] is pinned with two worker *Odontomachus simillimus* (F. Smith) (Ponerinae) [det. E. O. Wilson]. There are no accompanying data, so it can only be tentatively assumed that this male was taken from a nest of the ant.

STRUCTURE AND TERMINOLOGY

Sexual dimorphism is so pronounced in this genus that it is necessary to treat the two sexes separately both here and in the keys and descriptions. Following a discussion of the useful characters of each sex I have provided a summary of the various abbreviations employed in the text.

Males.—Males are fully winged, usually dark in color, and vary in size from 2 to 6 mm. The mandibles (Figs. 7-32) have from 3 to 5 teeth; these teeth are simply numbered one to five, starting with the apical (outermost) tooth. Mandibular dentition is extremely important, and it is desirable to spread the mandibles of freshly caught specimens. The clypeus has a median elevation and is extended apically as a more or less truncate lobe (Figs. 1-6, 43-50). The head (Figs. 1-6) is sublenticular or somewhat elongate and has prominent, hairy eyes and three ocelli. Length of the head (LH) is measured from the vertex crest to the median apical margin of the clypeus, width of the head (WH) at the maximum point, including the eyes; both of these measurements are made at full frontal view. Width of the front (WF) is measured at its minimum point, usually about the middle of the eyes. The height of the eye (HE) is measured at its maximum in lateral aspect. As an indication of ocellar size, I have measured the transverse diameter of the anterior ocellus (DAO) and compared this with the width of the front; in species with the smallest ocelli DAO is about .10 X WF, while in species with the largest ocelli DAO is nearly .40 X WF. The ocello-ocular line (OOL) is the shortest distance from the eye tops to the lateral ocellus, measured by looking directly down upon it with the specimen appropriately tilted. This measurement is frequently compared to the width of the ocellar triangle (WOT), which is simply the distance across (and including) the posterior ocelli. The front angle of the ocellar triangle varies interspecifically and provides an important means

of separating certain species. I have measured this by superimposing the right angle of a grid micrometer over the outer sides of the anterior and one lateral ocellus and determining whether the angle of the line extending to the other lateral ocellus is greater or less than a right angle. The occipital carina is obsolete dorsally except as otherwise noted. The antennae have 13 segments, of which the scape is much the largest. The relative length of the flagellum is of much importance, and in order to have an easily comparable measurement I have selected segment eleven (the antepenultimate) for measurement. In species with especially long antennae, this segment measures two or more times as long as wide, while in specimens with very short antennae it may actually be wider than long. This measurement is especially subject to error because of the tendency of the antennae to coil and because the segments are capable of some extension (specimens preserved in alcohol tend to give higher measurements).

The term thorax is here employed to mean the functional thorax or alitrunk. The pronotum is gradually expanded behind and shows little variation in the genus. On the mesonotum, the mesoscutum possesses well developed parapsidal furrows, while the more median notauli show much variation in degree of development; the scutellum has a basal transverse groove, a median elevated disc, and large lateral foveae. The propodeum shows much variation in length and measurements have been found useful. Its total length, from margin of metanotum to posterior rim (articulation with gaster) is compared with its maximum width, both these measurements being made in full dorsal view. In lateral view, the height of the propodeum is measured from the carina running forward from above the hind coxae. A single median carina and lateral carinae margining the disc are present in all species except as otherwise noted. The mesopleurum is oblique and elongate and is the source of useful taxonomic characters, though these are often subtle and difficult to express. At the top, just below the base of the hind wings, is a more or less well defined swelling, here called the mesopleural callus; this is subtended by a usually elongate impression; the remainder of the mesopleurum tends to be sculptured in various ways. The legs are slender and short-haired, and aside from slight differences in dimensions of the femora show no important specific differences. The tarsal claws normally have a single erect tooth, but this tooth may be extremely weak or (in several South American species) entirely absent. The fore wings (Figs. 51-62) have a

characteristic venation which shows little variation within the genus. The vein which extends beyond the origin of the basal and transverse median veins and is more or less in a straight line with the median vein is here termed the discoidal vein, the cell below it the discoidal cell. This vein may be well defined, weak, faintly indicated but unpigmented, or entirely absent. On the outer part of the wing there are a number of hyaline streaks which presumably mark the course of former veins; these are omitted from the figures, and I have found them of no particular value in classification. The hind wing has a single strong but short vein at the base and a strong jugal lobe. The length of the fore wing (LFW) is a useful measurement for size of the wasp, as total body length is difficult to measure accurately.

The term abdomen is here used to mean the gaster (true abdomen minus the propodeum) in the common manner of hymenopterists. The apical abdominal sternite or subgenital plate is of simple structure and usually somewhat truncate apically. The genitalia are highly characteristic of the genus and show very little variation within the genus (including also Old World species). Their typical form is shown in Figure 63. The parameres are deeply divided into a relatively broad outer arm and a more slender inner arm, the latter having much fewer setae. The volsellae are complex, with digitus and cuspis about as figured in all species, but looking very different from different points of view; at the base of the volsellae, medially, is a portion containing several strong radiating sulci, resembling a fan and therefore here termed the vannus (absent in one species). The aedoeagus is normally flat, somewhat bottle-shaped, and of simple structure, though in one species it is compressed and of more complex structure (Fig. 67).

Female. — Females are completely apterous and without tegulae, and show corresponding reductions in the thorax (Reid, 1941, figured and discussed the thorax of the related genus *Mangesia*, from Africa). They are nearly sightless, usually pale in color, and clearly modified for a hypogaecic existence. They vary in length from 1.8 to 6.5 mm., the females of a given species being (on the average) considerably smaller than the males. The mandibles have three or four teeth, sometimes only two teeth which are prominent, the third being very small (Figs. 33-42). The clypeus is very broad, truncate or somewhat emarginate, and has a median ridge. The scape is large, the flagellum short and somewhat thickened from the base, the flagellar segments (except the

last) broader than long; the antennae are much alike in all species. The eyes consist of a single facet on each side; in some of the smaller species the eyes cannot be seen at all, but it is difficult to be sure that the facet is not there but indistinguishable from the surface sculpturing. The head itself is subquadrate, slightly longer than wide. Length of the head (LH) is measured from median apex of clypeus to median crest of vertex in full frontal view. Width of the head (WH) is measured at the mid-point of LH; usually the head is not wider elsewhere than at this point, but in a few species it is slightly wider anteriorly than here. The occipital carina is obsolete dorsally except in one species as noted. Ocelli are absent.

The length of the thorax (LT), again including the propodeum, is measured from the anterior end of the pronotal disc (omitting the depressed collar) to the posterior end of the propodeum. The pronotum is large and is longer than broad; its median length is also measured without consideration of the collar, while its width is measured posteriorly, across the rather prominent shoulder-like corners. The mesonotum is strongly depressed anteriorly, fitting against the pronotum; this is the mesoseutum according to Reid (1941). The remainder of the mesonotum, although called the mesonotum in the text, is said by Reid to be the scutellum; it is triangular, somewhat pointed posteriorly, and is measured at its maximum points (anteriorly for width, medially for length, omitting the depressed portion). The mesopleura are large and have dorsal portions which flank the mesonotum; these round off laterally and form much the widest part of the thorax. The propodeum is strongly narrowed anteriorly to a pair of pointed processes which embrace the posterior point of the mesonotum; the disc is subcarinate laterally, the carinae being interrupted at one point by the spiracles; the disc is without strong sculpturing of any kind. The legs are short-haired and without spines except for the middle tibiae and tarsi, which are strongly spinose. The abdomen (= gaster) is sessile, subfusiform, and terminates in a short sting which is embraced by stout sting-sheaths.

ALPHABETICAL LIST OF ABBREVIATIONS USED IN TEXT

- Ant. 11: antennal segment eleven (antepenultimate)
DAO: diameter of anterior ocellus (transversely)
HE: height of eye (maximum, lateral view)

L: length

LFW: length of fore wing

LH: length of head (full front view, including clypeus but not mouthparts)

LT: length of thorax (excluding collar but including propodeum)

OOL: ocello-ocular line

W: width

WF: width of front (at minimum point)

WH: width of head (full frontal view; see preceding section for details)

WOT: width of ocellar triangle (including lateral ocelli)

X: times

Genus PSEUDISOBRACHIUM Kieffer

Isobrachium Ashmead, 1893, Bull. U. S. Nat. Mus., 45: 35-40. [Nec Förster, 1856; misidentification.]

Pseudisobrachium Kieffer, 1904, Ann. Mus. Civ. Stor. Nat. Genova, (3a)1: 368. [Type species *P. laticeps* Kieffer (♀, Bolivia); designated by Kieffer, 1906, in André, Spec. Hym. Eur., 9: 297.]

Monopyris Kieffer, 1905, Ann. Sci. Soc. Bruxelles, 29: 101, 124. [Type species *Epyris holidayi* Westwood (= *subcyanicum* Haliday) (♂, Europe); monobasic.] Placed in synonymy by Kieffer, 1906, *op. cit.*, p. 297.

Plutobethylus Kieffer, 1910, Ann. Soc. Ent. France, 79: 51. [Type species *P. distans* Kieffer (♂, Peru); original designation.] New synonymy.

Lyssepyris, Kieffer, 1913, Boll. Lab. Zool. Portici, 7: 108. [Type species *Holepyris flavicornis* Kieffer (♂, Nicaragua); monobasic.] New synonymy.

Xantepyris Kieffer, 1913, Boll. Lab. Zool. Portici, 7: 108. [Type species *Epyris flaviventris* Kieffer (♂, Texas); monobasic.] New synonymy.

Lissepyris Kieffer, 1914, Das Tierreich, 41: 236. Error for *Lyssepyris*.

Xanthepyris Kieffer, 1914, Das Tierreich, 41: 417. Correction of typographical error.

Parisobrachium Kieffer, 1914, Das Tierreich, 41: 424. [Type species *Rhabdepyris* (?) *albipes* Kieffer (♂, Paraguay); monobasic.] New synonymy.

Generic characters. — *Male.* Mandibles with four or five (rarely three) teeth; clypeus with a median carina, usually truncate but occasionally dentate or emarginate apically; eyes with abundant short hair; antennae simple, 13-segmented, the flagellar pubescence appressed or suberect, never erect and bristling. Pronotum without transverse grooves or carina; scutellum with a basal transverse groove and with lateral foveae; propodeum with

a single median carina (rarely obsolete) and without a carina margining the dorsal surface posteriorly. Tarsal claws with a single tooth which may be very weak or occasionally absent. Wings with basal vein reaching subcosta well basad of stigma; discoidal vein present or absent, discoidal cell occasionally fully outlined by weak veins. Genitalia with parameres deeply divided into two separate arms; basis volsellaris with vannus present (except rarely); aedoeagus simple and depressed (with rare exceptions). *Female*. Mandibles with three or four teeth; clypeus with a median carina, truncate or emarginate apically; eyes each consisting of a single facet, sometimes indistinct; ocelli absent; head longer than broad; antennae short, 13-segmented, flagellum somewhat thickened. Wings and tegulae absent; pronotum longer than broad; mesonotum subtriangulate, subacute behind; propodeum gradually narrowed anteriorly to a pair of points which flank the posterior point of the mesonotum, the thorax much constricted laterally at the junction of the propodeum and mesonotum; mesopleura large, bulging laterally; middle tibiae stout and strongly spined, middle tarsi also somewhat spinose, legs otherwise short-haired but not spinose.

Remarks. I have seen no specimens of the type species of *Pseudisobrachium*, but have no reason to question that it belongs to the genus as here understood. Through the courtesy of Dr. G. Steinbach of the Zoologisches Museum der Humboldt-Universität zu Berlin, I have had an opportunity to study the type specimen of the type species of *Plutobethylus* Kieffer. This species is a typical *Pseudisobrachium* in every respect other than the tarsal claws, which are simple as indicated by Kieffer. Since the tooth on the tarsal claws is very minute and difficult to see in some Nearctic species, it seems to me a mistake to emphasize this character to that extent.

With the aid of Dr. R. L. Doutt, of the University of California at Albany, I have been able to borrow for study the type specimen of *flavicornis* Kieffer, type of the genus *Lyssepyris* Kieffer. This species is a perfectly typical *Pseudisobrachium* and in fact will run to that genus in Kieffer's key to genera. In his original description of *flavicornis*, Kieffer states clearly that the scutellum has a transverse furrow at the base. But in order to properly run out *Lyssepyris* in his key, one has to assume the scutellum has two pits at the base!

Xanthepyris Kieffer, based on *flaviventris* Kieffer, from Texas, is also a synonym of *Pseudisobrachium*. In this instance I am

indebted to Mr. Karl-Johan Heqvist of the Naturhistoriska Riksmuseet of Stockholm for sending me the type of *flaviventris*. *Xanthepyrus* was described as having two unconnected pits at the base of the scutellum. The type of *flaviventris* is pinned through the mesonotum in such a way that the structure of the base of the scutellum is difficult to observe. However, the species is a not uncommon one and in every way a typical *Pseudisobranchium*; in other specimens the scutellum can be seen to have a transverse groove at the base.

Parisobranchium Kieffer, 1914, based on a single species from Paraguay, is said to differ from *Pseudisobranchium* in lacking a discoidal vein and in having three propodeal carinae (although Kieffer for some reason places the genus in the Epyrini rather than the Pristocerini). Dr. Delfa Guiglia, of the Museo Civico di Storia Naturale, Genoa, Italy, has been kind enough to send me a cotype of the type species, *albipes*, and I find it to be a rather typical *Pseudisobranchium*. Study of the North American species shows that the presence or absence of a discoidal vein is of little significance in this complex, and the propodeum of *albipes* differs scarcely at all from that of several other species.

Protisobranchium Benoit, 1957, based on males of two species from the Congo, is said to differ from *Pseudisobranchium* in lacking a discoidal vein, while *Afrisobranchium* Benoit, 1957, also based on males of two Congo species, is said to differ in having the basal vein meeting the tip of the pterostigma. I am inclined to question the generic value of these characters, but in the absence of material I prefer to make no definite disposition of these names.

KEY TO SPECIES OF PSEUDISOBRACHIUM

Males

1. Mandibles with five teeth, the basal three teeth similar in size and shape, or sometimes the basal tooth slightly thicker and more rounded than the third and fourth teeth (Figs. 7-18) 2
- Mandibles with four teeth, rarely with three, occasionally with five, in the latter case the basal tooth broad and curving gradually into the inner mandibular margin and the third and fourth teeth very small (Figs. 19-32) 24
2. Abdomen with a distinct, slender petiole (Fig. 68); discoidal vein arising far down on the transverse median vein (Fig. 52); vannus of genitalia wholly wanting (Fig. 65) (Panama) 43. *petiolatum* n. sp.
- Abdomen sessile; discoidal vein arising near top of transverse median vein, or absent; vannus present, with radiating ridges (Figs. 63-64) 3

3. Relatively robust species, propodeum short, measuring less than 1.5 times as long as broad, in lateral view less than 2.5 times as long as high 4
 Very slender species, propodeum in particular very elongate, measuring at least 1.5 times as long as broad, in lateral view at least 2.5 times as long as high (*occidentale* group) 14
4. Mesopleural callus convex, strongly polished, non-alutaceous or nearly so, contrasting to the remainder of the mesopleurum, which is alutaceous and/or punctate 5
 Mesopleural callus alutaceous, not especially prominent or strongly contrasting to the remainder of the mesopleurum, which is also alutaceous (in one species the whole mesopleurum is convex and shining, the callus not well differentiated) (*obscurum* group) 18
5. Aedeagus compressed, of complex structure (Fig. 67); mesonotum, anteriorly between the notauli, very strongly polished, with only a few punctures; propodeum short, rugose (eastern U. S.)
 44. *anomalum* n. sp.
 Aedeagus depressed, simple (Fig. 63); other characters not entirely as above (*crassum* group) 6
6. Front strongly shining, barely if at all alutaceous, with very strong punctures 7
 Front weakly to moderately shining, alutaceous, punctures not especially strong 11
7. Ocelli very large, DAO at least .25 X WF, OOL not much if any more than half WOT; wings very pale; abdomen rufous (Texas)
 5. *crassum* n. sp.
 Ocelli smaller, DAO less than .2 X WF, OOL subequal to or greater than WOT; wing veins and abdomen dark 8
8. Antennae medium to dark brown; notauli strongly impressed for most of length of mesoscutum 9
 Antennae light reddish-brown; notauli impressed on anterior half of mesoscutum only 10
9. Mandibles broad apically and with the teeth large and subequal (Fig. 9); eyes large, bulging laterally, removed from vertex crest by a distance slightly less than their own height; WF 1.27 X HE (Central Mexico) 1. *micheneri* n. sp.
 Mandibles with the basal teeth smaller and more rounded than the apical tooth (Fig. 10); eyes small, not bulging, removed from vertex crest by a distance greater than their own height; WF 1.6 X HE (central and southern Mexico) 2. *blomi* n. sp.
10. Ocelli of moderate size, in a fairly broad triangle (OOL about .9 X WOT); legs (except front coxae) bright straw-yellow (southern Mexico) 3. *perpunctatum* n. sp.
 Ocelli small, in a compact triangle far removed from the eyes (OOL 1.3-1.45 X WOT); legs brown, paler apically (Mexico and Guatemala) 4. *dalmati* n. sp.

11. Clypeus unusually broad, its lateral angles slightly produced (Fig. 43); propodeal disc shining, with rather strong transverse striae (Panama)9. *clypeatum* n. sp.
 Clypeus with its lateral angles obtuse, not produced; propodeal disc less strongly shining and with less definite striae, if any12
12. Clypeus with a median tooth (Fig. 47); basal three teeth of mandibles small, forming a unit which is somewhat set off from the other teeth (Fig. 12); propodeum with transverse striae (Costa Rica)8. *cooperi* n. sp.
 Clypeus without a median tooth; mandibular dentition not as above; sculpturing of propodeum weaker and with little tendency to form striae13
13. Clypeus wide at the base, its sides strongly converging (Fig. 44); ocelli far removed from eyes (OOL 1.56-1.75 X WOT); antennae shorter (segment eleven less than twice as long as thick) (Panama and Costa Rica)7. *rettenmeyer*i n. sp.
 Clypeus narrower basally, its sides less strongly convergent (Fig. 48); ocelli less far removed from eyes (OOL 1.0-1.3 X WOT); antennae longer (segment eleven at least twice as long as thick) (Texas)6. *texanum* n. sp.
14. Front very broad in relation to eye height (WF 1.4-1.56 X HE); ocelli small, far removed from eyes (OOL 1.1-1.4 X WOT); antennae rather short, segment eleven less than 1.4 X as long as thick (central Mexico)14. *brunneum* n. sp.
 Front narrower (WF .90-1.5 X HE); ocelli not so far removed from eyes (OOL .43-1.12 X WOT); in specimens having the front rather broad and the ocelli fairly far removed from the eyes (some specimens of *occidentale*) the antennae are much longer, segment eleven at least 1.5 X as long as thick15
15. Front angle of ocellar triangle slightly greater than a right angle; antennae short, segment eleven not more than 1.5 X as long as thick; very small, maximum wing length 2.1 mm. (Texas)12. *matthewsi* n. sp.
 Front angle of ocellar triangle slightly less than a right angle; antennae longer, segment eleven from 1.4-2.6 X as long as thick; length of fore wing 2.1 to 5.0 mm.16
16. Front very narrow, WF less than HE (.90-.95 X HE); body castaneous; distance from eye tops to vertex crest equal to less than half HE (southern California)11. *castaneum* n. sp.
 Front somewhat broader, WF subequal to or greater than HE; body dark brownish-fuscous; distance from eye tops to vertex crest equal to more than half HE.17
17. Larger, minimum wing length 2.8 mm.; front of moderate breadth (WF 1.13-1.53 X HE) (California and Arizona)10. *occidentale* n. sp.

- Smaller, maximum wing length 2.7 mm.; front narrow (WF .97-1.42 X HE) (central Mexico)13. *nigriculum* n. sp.
18. Anterior part of mesopleurum with many strong punctures; wing veins and stigma brown, discoidal vein present and weakly pigmented; fore wing at least 2.9 mm. long19
Anterior part of mesopleurum without strong punctures; wing veins light brown to colorless; minute species, LFW 1.6-3.1 mm.20
19. Antennae and legs brown; eyes small, removed from vertex crest by a distance about equal to their own height; OOL much exceeding WOT (Mexico)15. *michoacanum* n. sp.
Antennae ferruginous, legs bright castaneous; eyes larger, removed from vertex by a distance much less than their own height; OOL slightly if at all exceeding WOT (South Carolina and Florida)
.....16. *carolinianum* n. sp.
20. Front broad and eyes small (WF at least 1.4 X HE); ocelli very small (DAO about .15 X WF)21
Front narrow and eyes large (WF not over 1.3 X HE); ocelli enlarged at least slightly (DAO .18-.26 X WF)23
21. Thoracic dorsum and pleura strongly shining, very weakly alutaceous; legs and antennae dark brown (New Mexico)
.....17. *gibbosum* n. sp.
Thoracic dorsum and pleura alutaceous, weakly to moderately shining; legs and antennae yellowish or pale castaneous22
22. OOL and WOT subequal; discoidal vein of fore wing unpigmented (Arizona)18. *otiosum* n. sp.
OOL much greater than WOT; discoidal vein of fore wing present as a pigmented streak (Nicaragua)19. *testaceipes* Kieffer
23. Ocelli in a close triangle, front angle less than a right angle; front virtually impunctate (Arizona)20. *pallidum* n. sp.
Ocelli in a broad triangle, front angle greater than a right angle; front with small though usually quite distinct punctures (W. Texas and Arizona to Chihuahua and Baja California)
.....21. *obscurum* n. sp.
24. Mandibles with five teeth, though the third and fourth teeth are very small and may be partially fused (Figs. 19-21)25
Mandibles with only three or four teeth28
25. Discoidal vein of fore wing present, well pigmented; anterior part of mesopleurum strongly punctate; large species with relatively long antennae (segment eleven at least 1.5 X as long as thick (*prolongatum* group)26
Discoidal vein of fore wing absent or at least unpigmented; mesopleurum obscurely punctate; minute, deserticolous species with shorter antennae than above20

26. Front relatively broad and eyes relatively small (WF 1.5-1.8 X HE, .66-.73 X WH); ocelli small (DAO not over .15 X WF) (southern Canada and northern United States, south in Appalachians to Carolinas)24. *prolongatum* (Provancher)
 Front relatively narrow and eyes relatively large (WF .90-1.25 X HE, .52-.62 X WH); ocelli somewhat enlarged (DAO at least .18 X WF)27
27. Mesoscutum strongly shining, non-alutaceous, punctures small but very distinct, more crowded laterally; ocelli very large, anterior ocellus measuring nearly .2 mm. in diameter (central Mexico)22. *attecum* n. sp.
 Mesoscutum moderately shining, alutaceous at least on the sides, punctures present but less pronounced than above; ocelli of moderate size, anterior ocellus less than .15 mm. in diameter (eastern United States)23. *arenarium* n. sp.
28. Mandibles slender and with only three teeth, the basal tooth large, somewhat rounded (Fig. 32); propodeum with some weak longitudinal ridges medio-basally, but without a single distinct median carina (Panama)46. *superbum* n. sp.
 Mandibles with four teeth, third tooth often rather small, very rarely absent, but when so basal tooth not as above (Figs. 22-31); propodeum with a distinct median carina29
29. Species with small eyes and ocelli (WF more than 1.4 X HE; ocelli not or only slightly enlarged) (Figs. 1-4); vertex elevated far above eye tops, distance from eye tops to vertex crest commonly subequal to or greater than eye height (*carbonarium* group)30³
 Species with relatively large eyes, ocelli also usually enlarged (WF less than 1.4 X HE) (Figs. 5-6); vertex elevated above eye tops a distance usually considerably less than eye height (*rufiventre* group)41³
30. Front and thoracic dorsum and pleura (including the weakly defined mesopleural callus) so strongly and regularly alutaceous as to appear beaded, punctures barely if at all evident; OOL at least nearly 1.5 WOT (eastern United States)25. *carbonarium* (Ashmead)
 Front and thoracic dorsum and pleura not beaded in appearance, merely somewhat alutaceous and often punctate31
31. Elongate species, antennae quite long and slender (segment eleven at least 1.4 X as long as thick); either the propodeum is unusually elongate (over 1.5 X as long as wide) or the mesopleurum has large punctures anteriorly32
 More compact species, antennae only occasionally with segment eleven as much as 1.4 X as long as thick, if so other characters not as above33

³ In doubtful cases rely upon a careful determination of the WF/HE ratio; species in which the individual variation embraces the ratio 1.4 will key out on both sides of this couplet.

32. Eyes bulging, head narrowed behind eyes and vertex rather narrowly rounded (Fig. 2); OOL and WOT subequal; mesopleurum without well-defined punctures (California) 31. *persimile* n. sp.
 Eyes not bulging, head wide behind eyes and vertex very broadly rounded; OOL much exceeding WOT; mesopleurum with some coarse punctures anteriorly (Washington and British Columbia east to Maritimes and south to North Carolina)
 24. *prolongatum* (Provancher)
33. All four mandibular teeth projecting and tooth-like, third and fourth teeth subequal or fourth somewhat the larger (Figs. 24-26); small species occurring in southwestern United States, Mexico, and Central America 34
 Basal tooth of mandibles very different from the small (rarely absent) third tooth, broad and with its inner margin arching into the inner mandibular margin (Figs. 23, 27, 28) 36
34. Front obscurely if at all punctate; eyes bulging, vertex narrowly rounded off far above eye tops (Fig. 4); LFW 1.3-2.0 mm.
 28. *minutissimum* n. sp.
 Front with shallow but rather distinct punctures; eyes less bulging and vertex much more broadly rounded; LFW 2.3-3.0 mm 35
35. Legs (except front coxae) light yellowish-brown; wing veins light brown to almost colorless; OOL subequal to WOT (Arizona)
 30. *navajo* n. sp.
 Legs brown, wing veins brown; OOL much exceeding WOT (Arizona and New Mexico) 27. *minimum* n. sp.
36. Antennae relatively smooth (as, for example, in *flavinervis*), setulae on flagellum pale, minute, subappressed, erect setae on flagellum short and inconspicuous; ocellar triangle rather broad 37
 Antennae roughly pubescent (as, for example, in *prolongatum*), flagellar setulae suberect, some of them .3 X as long as width of flagellum, erect setae numerous and some of them usually half as long as width of flagellum 39
37. Ocelli small (DAO .12-.15 X WF); front very broad (WF at least about 1.5 X HE) (Fig. 3); clypeus rather broadly truncate apically (Fig. 50); OOL at least equal to WOT 38
 Ocelli somewhat enlarged (DAO at least .19 X WF); front generally narrower and clypeus more narrowly truncate than above; OOL much less than WOT 48
38. WF at least 1.75 X HE; vertex elevated above eye tops a distance about equal to eye height (Fig. 3) (Durango) 32. *hurdi* n. sp.
 WF not more than about 1.5 X HE; vertex elevated above eye tops a distance equal to about .8 X HE (New Mexico)
 33. *krombeini* n. sp.
39. Ocelli small (DAO not more than .16 X WF), anterior ocellus situated above an imaginary line drawn between eye tops (Fig. 1); discoidal vein of fore wing present, pigmented for a short distance (Fig. 58) 40

- Ocelli somewhat enlarged and anterior ocellus situated on or touching an imaginary line drawn between eye tops (Fig. 5), or if not, then the discoidal vein is absent (Fig. 60) 43
40. Mesopleural callus shining, barely alutaceous, anterior part of mesopleurum with coarse punctures (Nicaragua and Honduras)
 29. *flavicornis* (Kieffer)
- Mesopleural callus alutaceous, slightly convex but not otherwise notably contrasting to remainder of mesopleurum, which is weakly to moderately punctate (eastern United States) 26. *ashmeadi* n. sp.
41. Front angle of ocellar triangle (as measured from outer sides of ocelli) less than a right angle (as in Figs. 4, 5) 42
- Ocelli in a broad triangle, front angle greater than a right angle (as in Fig. 6) 48
42. Thoracic dorsum strongly polished, mostly if not entirely non-alutaceous, contrasting with the front, which is distinctly alutaceous; mesopleurum also strongly shining; mesoscutum with small, sharply defined, rather evenly spaced punctures (Arizona) 38. *apache* n. sp.
- Thoracic dorsum not wholly strongly polished, always in large part alutaceous, not strongly contrasting to front 43
43. Fore wing with discoidal vein present as a distinctly pigmented streak (Fig. 59); wings with setulae dark, veins brown 44
- Fore wing with discoidal vein absent or merely indicated by an unpigmented line (Figs. 60-61); wings pale, veins light brown to colorless 46
44. A minute species, LFW 1.6-2.5 mm.; legs and antennae brownish; antennae of moderate length, segment eleven about 1.2 X as long as thick; pubescence of flagellum unusually coarse and suberect (Louisiana and Arkansas) 36. *pusillum* n. sp.
- Larger, LFW 2.1-3.7 mm.; legs and antennae light yellowish or reddish brown, or if darker brown (some specimens of *comanche*) antennae longer than above and flagellar pubescence less coarse 45
45. Vertex narrowly rounded, eyes strongly bulging laterally; an elongate species, propodeum, in lateral view, much more than twice as long as high, thorax, in lateral view, more than 3 X as long as its maximum height (Arizona) 37. *comanche* n. sp.
- Vertex more broadly rounded, eyes less strongly bulging (Fig. 5); body compact, propodeum about twice as long as high, thorax less than 3 X as long as its maximum height (eastern United States)
 35. *rufiventre* (Ashmead)
46. Mesopleural callus well differentiated, convex and polished, remainder of mesopleurum somewhat shining and/or punctate; antennae short (segment eleven 0.9-1.2 X as long as thick); vertex broad, almost straight across (eastern United States) 34. *flaviventre* (Kieffer)
- Mesopleural callus weakly differentiated, not strongly convex and polished; antennae of variable length, often longer than above ... 47

47. Clypeus emarginate apically (Fig. 49); ocelli not much enlarged (DAO about .17 X WF); body dark brown to black (Texas) 40. *emarginatum* n. sp.
 Clypeus truncate apically (Fig. 45); ocelli usually larger than above (Texas to California) 39. *foutsii* n. sp.
48. Front with small but usually very clearly defined punctures; eyes relatively smooth, the setae being shorter and sparser than is usual in this genus; wing veins nearly colorless; antennae various shades of yellow or light castaneous, very smooth (western Texas to California and Baja California) 42. *flavinervis* Fouts
 Front obscurely if at all punctate; eyes about as hairy as usual in the genus; wing veins light brown (Nebraska to eastern Texas and Mexico) 49
49. Ocelli of moderate size (DAO .19-.24 X WF); abdomen brown like head and thorax (Nebraska to Nuevo Leon) 41. *rectangulatum* n. sp.
 Ocelli extremely large (DAO .33-.37 X WF); abdomen rufous, contrasting to head and thorax (lower Rio Grande Valley of Texas) 43. *macrops* n. sp.

Females

1. Mandibles with four well defined teeth (Figs. 33-36) 2
 Mandibles with three teeth, sometimes with only two large, well-defined teeth, sometimes with a rudimentary fourth tooth indicated by an undulation on the inner mandibular margin (Figs. 37-42) 8
2. Basal tooth of mandibles large and projecting (Figs. 33-34); entire body dark brown to almost black 3
 Basal two teeth of mandibles small and drawn back along inner margin of mandibles (Figs. 35-36); abdomen, at least, pale 4
3. Very large, length of head much over 1 mm.; median carina of clypeus continued as a short apical tooth; head 1.15 X as long as wide, occipital carina obsolete dorsally (Panama) 47. *gigas* n. sp.
 Smaller, head length well under 1 mm.; clypeus without a median apical tooth; head 1.3 X as long as wide, occipital carina complete dorsally (Panama) 48. *zeteki* n. sp.
4. Head and thorax nearly black, eye spots contrastingly pale, abdomen contrastingly rufous; entire head with strong, rather evenly spaced punctures, between which it is strongly polished (Guatemala) 49. *manni* n. sp.
 Head and thorax pale to medium brown, only slightly if at all darker than abdomen, eyes less strongly contrasting to head color 5
5. Anterior part of front and sides of head alutaceous and/or striato-punctate; generally larger than below, head length .6 mm. or more . 6
 Head not at all striato-punctate and not or barely alutaceous, strongly shining; minute species, head length .4-.63 mm. 7

6. Head slightly, gradually narrowed behind, anterior part of front alutaceous but not or only slightly striato-punctate; pronotal disc elongate, about 1.6 X as long as its posterior width (Utah, California) 50. *paucipunctatum* Fouts
- Head parallel-sided or very slightly bulged near the middle, anterior part distinctly striato-punctate laterally and dorsally; pronotal disc about 1.4 X as long as its posterior width (California, Arizona) 10. ? *occidentale* n. sp.
7. An unusually slender species, head 1.42 X as long as wide, mesonotum about twice as long as wide; head punctures separated, for the most part, by about twice their own diameters (West Texas) 12. ? *matthewsi* n. sp.
- A somewhat stockier species, head 1.35 X as long as wide, mesonotum 1.4 X as long as wide; head punctures separated, for the most part, by about their own diameters (southwestern United States) 21. ? *obscurum* n. sp.
8. Basal tooth of mandibles large, strongly projecting (Fig. 42); clypeal carina slightly produced beyond apical margin, which is concave; head and thorax deep brown, eyes white (Costa Rica) 51. *costaricanum* n. sp.
- Basal tooth of mandibles small, drawn back along inner margin of mandible; other characters not as above 9
9. Head strongly striato-punctate, at least antero-laterally; head parallel-sided or sides weakly convex, LH 1.1-1.3 X WH; generally larger and darker species, LH usually over .8 mm. (rarely down to .68 mm.) 10
- Head not or very weakly striato-punctate (if rather evidently so, LH more than 1.3 X WH and sides of head weakly, gradually convergent behind); generally smaller species of paler coloration, LH not over .8 mm. 11
10. Disc of propodeum strongly shining, barely if at all alutaceous, punctures small and confined to extreme sides; head 1.2-1.3 X as long as wide (southern Canada and northern United States, south to North Carolina) 24. *prolongatum* (Provancher)
- Disc of propodeum moderately shining, evidently alutaceous, punctures on sides fairly strong, punctate parts of disc equal in area to impunctate median band; head about 1.15 X as long as wide (eastern United States) 23. ? *arenarium* n. sp.
11. Punctures of front very numerous, separated at least in part by no more than their own diameters (except medially), anteriorly decidedly crowded; front usually somewhat alutaceous, at least in part, under side of head often rather strongly alutaceous 12
- Punctures of front sparse, separated for the most part by more than their own diameters; front strongly shining, not at all alutaceous, under side of head somewhat alutaceous or not 16

12. Length of head not over .6 mm.; front with punctures somewhat less crowded than below 13
 Length of head generally over .6 mm.; front usually somewhat darker and with punctures relatively more crowded than above 14
13. Front shining, weakly alutaceous, with punctures somewhat more evenly distributed than below; LH 1.22-1.35 X WH (eastern United States) 34. ? *flaviventre* (Kieffer)
 Front conspicuously alutaceous, in fact obscurely striate anteriorly, punctures rather sparse posteriorly and much more crowded anteriorly; LH 1.4 X WH (southwestern United States) 42. ? *flavinervis* Fouts
14. Head rather elongate, LH 1.3-1.4 X WH, sides of head weakly, gradually convergent behind (eastern United States) 25. ? *carbonarium* n. sp.
 LH 1.1-1.25 X WH 15
15. Head yellowish-brown; front unusually flat, punctures relatively weak (Pacific states) 31. ? *persimile* n. sp.
 Head ferrugino-castaneus; front not especially flat, punctures strong (eastern United States) 35. *rufiventre* (Ashmead)
16. Punctures of front large and distinct; LH .47-.53 mm. (eastern United States) 26. ? *ashmeadi* n. sp.
 Punctures of head very small and shallow; LH about .4 mm. (Arkansas) 36. ? *pusillum* n. sp.

CRASSUM SPECIES-GROUP

The males of this group have a relatively compact body form, the propodeum being distinctly shorter and higher than in the *occidentale* group. The most distinctive feature of the group is the convex, prominent, shining and non-alutaceous mesopleural callus, which contrasts strongly with the remainder of this sclerite. The mandibles are five-toothed; in some species the basal tooth is somewhat thicker and more rounded than the two following teeth, approaching the condition in the *prolongatum* group. The group falls readily into two subgroups: in one the head and thoracic dorsum are shining and strongly punctate; in the other these areas are dull, alutaceous, and weakly if at all punctate. Each of these subgroups has several species in Central America and Mexico and a single species in southern Texas. The compact form and relatively large size of species of this group, the full mandibular dentition, the variation in the shape of the clypeus, the complete notauli of some species, and other characters suggest that this may be the most primitive of the several species groups (i.e., closest to related genera such as *Pristocera*, *Propristocera*, and *Cleistepyris*).

No females can presently be assigned to this group with any real certainty. I would expect the females to have relatively broad mandibles, probably with four strong teeth. Two species described later in the paper, *gigas* and *zeteki*, have mandibles of this type and may represent females of this group. Another species, *manni*, may or may not go with this group.

TABLE I

Species and locality	No.	LFW	WF/HE	OOL/WOT	DAO/WF	Ant. 11 L/W
<u>crassum</u>						
Brownsville, Texas	3	3.9 (3.7-4.2)	1.11 (1.0-1.2)	.45 (.42-.50)	.29 (.27-.31)	1.5 (1.4-1.7)
San Antonio, Texas	1	3.3	1.32	.62	.25	1.4
<u>micheneri</u>						
Teziutlan, Puebla	1	4.9	1.27	1.32	.17	2.0
<u>perpunctatum</u>						
Tehuantepec, Oaxaca	1	3.1	1.23	.92	.18	1.6
<u>blomi</u>						
San Cristobal, Chiapas	1	5.3	1.6	1.70	.13	2.2
Cuernavaca, Morelos	2	4.3 (3.7-4.9)	1.57 (1.54-1.6)	1.81 (1.62-2.0)	.11	2.1
<u>dalmati</u>						
Yepocapa, Guatemala	1	4.0	1.5	1.45	.12	1.6
"Mexico"	1	4.9	1.54	1.32	.14	2.1
<u>cooperi</u>						
Turialba, Costa Rica	1	2.7	1.52	1.83	.12	1.9
<u>clypeatum</u>						
Canal Zone	1	3.1	1.34	1.60	.13	2.0
<u>rettenmeyeri</u>						
Canal Zone	3	2.6 (2.2-2.9)	1.47 (1.43-1.5)	1.66 (1.56-1.75)	.13 (.11-.15)	1.7 (1.6-1.8)
Costa Rica	1	2.5	1.46	1.70	.11	1.7
<u>lexanum</u>						
Brownsville, Texas	1	2.9	1.40	1.00	.16	2.0
Harrington, Texas	5	3.4 (2.5-3.9)	1.41 (1.35-1.44)	1.22 (1.18-1.27)	.15 (.15-.16)	2.3 (2.2-2.5)
San Antonio, Texas	3	3.3 (3.2-3.3)	1.41 (1.38-1.44)	1.07 (1.05-1.11)	.16 (.15-.17)	2.2 (2.0-2.5)
Wharton, Texas	1	3.6	1.32	1.00	.16	2.3

1. PSEUDISOBRACHIUM MICHENERI new species

Holotype. — ♂, 5 mi. NE of Teziutlan, Puebla, Mexico, 4700 feet, 27 June 1953 (Univ. Kansas Mex. Exped.) [KU].

Description. — Length 5.5 mm.; LFW 4.9 mm. Head and thorax black, abdomen dark brown, slightly paler on the sides of the first two segments, apical third of mandibles light brown, teeth rufous; antennae medium brown; legs brown, becoming paler apically; wings lightly infuscated, stigma dark brown, veins brown. Mandibles broad apically, with five strong, sharp teeth (Fig. 9). Clypeus truncate apically, its median carina weakly arched in profile. Antennae elongate, first four segments in a ratio of about 26:8:18:15, segment eleven twice as long as thick; pubescence of flagellum coarse, setulae almost half as long as thickness of segments, erect setae nearly as long as width of flagellum. WF .61 X WH, 1.27 X HE; ocelli of moderate size,

in a small, compact triangle far removed from eyes; DAO .17 X WF; OOL 1.32 X WOT. Eyes large, prominently bulging from sides of head, removed from vertex crest by a distance nearly equal to their height. Front shining, toward vertex a little less strongly shining and more evidently alutaceous, over whole surface with large punctures which for the most part are separated by less than their own diameters. Pronotum with rough, reticulate sculpturing except along the posterior margin, which is smooth and shining. Mesoscutum shining, with strong, close punctures; notauli deeply impressed for full length of mesoscutum; scutellum punctate except in extreme center, basal groove broad and shallow, lateral foveae small, shallow. Propodeum 1.45 X as long as broad, in lateral view about 2.3 X as long as high; spiracles elongate-elliptical, directed dorsad; entire surface, including sides, with strong reticulate sculpturing; median carina strong, extending full length of dorsal surface. Mesopleural callus strongly convex, smooth and shining, with a few punctures anteriorly; remainder of mesopleurum with strong, close-set punctures. Discoidal vein of fore wing strong, in fact the entire discoidal cell outlined by faintly pigmented lines.

Remarks.—Although this species is known from but one specimen, this specimen is distinctive in so many ways that there is little question that it is specifically distinct from its relatives *crassum* and *blomi*. The latter species is apparently diurnal, the former nocturnal. The ocelli of *micheneri* are slightly larger than those of *blomi* but much smaller than those of *crassum*; the wing veins and membrane are pigmented as in *blomi*. In general, I would expect *micheneri* to be a diurnal species, but it may fly in shaded situations or in periods of reduced sunlight. The broad mandibles, complete notauli, and fully outlined discoidal cell suggest the genus *Pristocera*.

2. PSEUDISOBRACHIUM BLOMI new species

Holotype.—♂, San Cristobal las Casas, Chiapas, Mexico, 7500 feet, 28 April 1959 (H. E. Evans) [MCZ, No. 30265].

Description.—Length 6.1 mm.; LFW 5.3 mm. Black, sides of base of abdomen suffused with dark reddish-brown; antennae dark brown; coxae dark brown, legs otherwise medium brown; apical two-thirds of mandibles dark ferruginous; wings lightly infuscated, stigma dark brown, veins brown. Mandibles with five teeth, basal tooth somewhat rounded (Fig. 10). Clypeus truncate apically. Antennae elongate, first four segments in a

ratio of about 32:5:22:20, segment eleven 2.2 X as long as thick; pubescence of flagellum short and dark, erect setae short and inconspicuous. WF .71 X WH, 1.6 X HE; ocelli small, in a compact triangle far removed from eyes, DAO .14 X WF, OOL 1.7 X WOT. Eyes relatively small, not notably bulging; distance from tops of eyes to vertex crest actually slightly greater than eye height. Front strongly shining, barely alutaceous, with many small but strong punctures which are separated from one another by from 1-2 times their own diameters. Anterior half of pronotum somewhat roughened, weakly shining, posterior half smoother, punctate, shining. Mesoscutum shining, barely alutaceous, with close-set punctures except along the median line; notauli strong on the anterior two-thirds, reaching posterior margin as weak impressions only. Scutellum shining, punctate, the basal groove moderately wide, shallow. Propodeum measuring 1.4 X as long as broad, in lateral view 2.3 X as long as high; spiracles elongate-elliptical, directed dorso-laterad; disc with reticulate sculpturing which is strongest anteriorly. Mesopleural callus prominent, shining and impunctate, remainder of mesopleurum with large, coarse punctures, the punctures smaller posteriorly and nearly absent along posterior margin below callus. Fore wing with discoidal vein long and strong, the discoidal cell in fact faintly outlined by pigmented lines.

Paratypes. — MEXICO: 1 ♂, 4 mi. NW Cuernavaca, Morelos, 7500 feet, 28 June 1959 (H. E. and M. A. Evans) [CU]; 1 ♂, 6 mi. N. Cuernavaca, Mor., 7500 feet, 15 Aug. 1954 (J. G. Chilleott) [CNC].

Variation. — The paratypes are smaller than the type but differ only slightly in body measurements (Table I). The mandibles are yellowish apically and the legs bright castaneous beyond the coxae rather than dull brown as in the type. Since the type and paratypes are from widely separated mountain systems, it is not surprising that there are differences between them. However, I question that any of these differences are of specific value.

Remarks. — This large and distinctive species is named for Franz Blom of San Cristobal las Casas, Chiapas, my host during a most profitable stay in that city in April 1959. The type was taken on low broad-leaf foliage in a pine forest just west of town at about 11 in the morning. The first paratype listed was taken at about the same altitude and in precisely the same ecological situation; it was taken at about 10 in the morning.

3. PSEUDISOBRACHIUM PERPUNCTATUM new species

Holotype. — ♂, Tehuantepec, Oaxaca, Mexico, 9 Aug. 1958, 200 feet (E. G. Matthews) [MCZ, No. 30266].

Description. — Length 4.5 mm.; LFW 3.1 mm. Head and thorax black, abdomen reddish-brown, somewhat infuscated toward apex; antennae castaneous; legs wholly and uniformly light brown, except front coxae piceous; mandibles castaneous, teeth rufous; wings subhyaline, stigma brown, veins light brown. Mandibles with five teeth, about as figured for the preceding species. Clypeus truncate apically, its median elevation not arched in profile. Antennae rather long, first four segments in a ratio of about 21:5:13:12, segment eleven 1.6 X as long as thick; pubescence of flagellum pale, subappressed, erect setae pale, numerous, the longest ones slightly less than half as long as width of flagellum. WF .65 X WH, 1.23 X HE; ocelli somewhat enlarged, DAO .18 X WF, OOL .9 X WOT. Eyes rather large, removed from vertex crest by only .6 their height. Front shining, weakly alutaceous, with strong punctures which are separated by about or slightly less than their own diameters. Pronotum shining, strongly punctate, slightly roughened anteriorly. Mesoscutum strongly punctate except along midline; notauli strong on anterior .6, absent behind; scutellar disc sparsely punctate, basal groove straight, shallow. Propodeum measuring 1.35 X as long as broad, in lateral aspect measuring 2.4 X as long as high; spiracles elliptical, opening dorso-laterally; median carina short, extending only about half length of disc, which is covered with fine, somewhat irregular transverse striae. Mesopleural callus convex, non-alutaceous, strongly shining; remainder of mesopleurum alutaceous and punctate. Discoidal vein of fore wing weak, barely pigmented.

Remarks. — The one known specimen of this species was collected in a bare, arid field surrounded by irrigated land in the city of Tehuantepec; it came to the light of a Coleman lantern in the early evening.

4. PSEUDISOBRACHIUM DALMATI new species

Holotype. — ♂ [San Pedro] Yepocapa, Guatemala, [Dept. Chimaltenango, 4850 feet], May 1948 (H. T. Dalmat) [USNM, No. 65151].

Description. — Length 5.5 mm.; LFW 4.0 mm. Head and thorax black, abdomen dark reddish-brown suffused with lighter

brown basally and apically; scape brown, flagellum dull rufo-castaneous; front coxae black, legs otherwise medium brown except beyond apical two-thirds of tibiae, where they are pale yellow-brown; wings weakly infuscated, veins and stigma dark brown. Mandibles with five teeth, about as in the preceding two species. Clypeus truncate apically, its median elevation not arched in profile. Antennae rather short, scape especially short, with a ventral excavation which permits a strong elbowing of the antennae; first four segments in a ratio of about 22:6:15:15, segment three only 1.4 X as long as thick, segment eleven 1.6 X as long as thick; pubescence of flagellum light brown, subappressed, setae numerous, generally slightly less than half as long as width of flagellum. WF .68 X WH, 1.5 X HE; ocelli small, in a compact triangle far removed from eyes, DAO .12 X WF, OOL 1.45 X WOT. Eyes rather large, removed from vertex crest by a distance equal to about .9 their height. Front shining, non-alutaceous, with strong punctures which are separated from one another by less than their own diameters. Pronotum shining, strongly punctate, slightly roughened in front. Mesoscutum with the notauli strong on the anterior .6, absent behind; disc strongly punctate except on the median line; scutellar disc sparsely punctate. Propodeum short, in dorsal view measuring 1.25 X as long as broad, in lateral view 2.1 X as long as high; spiracles elliptical, directed dorsad; disc with strong reticulate sculpturing anteriorly and laterally, posteriorly with finer sculpturing which tends to form weak transverse ridges; median carina short. Mesopleural callus convex, strongly shining, non-alutaceous; remainder of mesopleurum also non-alutaceous, but wholly covered with very strong punctures. Fore wing with the discoidal vein longer than the basal vein, in fact the entire discoidal cell outlined by weakly pigmented veins.

Paratype. — 1 ♂, labeled simply "Mex." [ANSP].

Variation. — The single paratype is larger than the type, measuring about 6.5 mm. long, fore wing 4.9 mm. The abdomen is missing beyond the fourth segment. The legs are wholly dark except for a light spot at the inner apex of the middle and hind tibiae. The antennae are considerably longer than in the type, segment eleven measuring 2.1 X as long as broad. WF measures 1.54 X HE, OOL 1.32 X WOT. In other details the resemblance to the type is close.

Remarks. — I would judge this to be a diurnal species, as the ocelli are small and the colors dark. Its relationship to the preceding two species is close, but there are enough differences so that I feel confident that it is specifically distinct.

5. PSEUDISOBRACHIUM CRASSUM new species

Holotype. — ♂, Brownsville, Texas, Oct. 1942 (at light, E. S. Ross) [CAS].

Description. — Length 5.2 mm.; LFW 3.7 mm. Head and thorax dark brownish-fuscous, nearly black; abdomen bright reddish-brown; antennae ferruginous; coxae brownish, remainder of legs straw-yellow; wings subhyaline, stigma brown, veins amber. Mandibles with five teeth, the basal tooth somewhat thicker than the two rather small teeth next to it (Fig. 13). Apical margin of clypeus truncate; median carina not arched in profile. Antennae of moderate length; first four segments in a ratio of about 20:5:11:10, segment eleven 1.45 X as long as thick; pubescence of flagellum fine, pale, subappressed, erect setae short and inconspicuous. WF .6 X WH, 1.13 X HE; ocelli very large, DAO .27 X WF; OOL .5 X WOT; front angle of ocellar triangle slightly less than a right angle. Eyes removed from vertex crest by slightly more than half HE. Front strongly shining, only very weakly alutaceous, with strong punctures which are separated from one another by only slightly more than their own diameters. Pro- and mesonota also strongly shining and barely alutaceous, with strong punctures which are more widely separated between the notauli and absent from the center of the scutellum; notauli strongly impressed on anterior .7 of mesoscutum, absent behind. Propodeum 1.45 X as long as broad, in lateral view about twice as long as high; disc shining, alutaceous, median carina extending for only about half length of dorsal surface; spiracles elongate-elliptical, directed dorsad. Mesopleural callus strongly shining, non-alutaceous, but with a few punctures; remainder of mesopleurum weakly alutaceous, with small but distinct punctures. Discoidal vein of fore wing barely pigmented, about as long as basal vein.

Paratypes. — TEXAS: 1 ♂, same data as type [MCZ]; 1 ♂, Esperanza Ranch, Brownsville [USNM]; 1 ♂, San Antonio, Oct. 1942 (E. S. Ross) [CAS].

Variation. — The Brownsville paratypes approximate the type in size, but the San Antonio specimen is smaller (length of body 4.6 mm., of fore wing 3.3 mm). The latter specimen is a little less strongly punctate and has a relatively wider front and smaller ocelli (Table 1). The specimen from the Esperanza Ranch is the most strongly punctate of the lot, and in this specimen the notauli extend for only about half the length of the mesoscutum.

6. *PSEUDISOBRACHIUM TEXANUM* new species

Holotype. — ♂, Harlingen, Texas, 12 March 1945 (D. E. Hardy) [USNM, No. 65150].

Description. — Length 5.1 mm.; LFW 3.6 mm. Head and thorax black, abdomen dark brown, paler basally; mandibles light brown, teeth rufous; antennae dark brown, coxae dark brown, trochanters and femora medium brown, tibiae and tarsi light brown; wings subhyaline, stigma brown, veins light brown. Mandibles with five teeth, the three inner teeth subequal. Clypeus narrow, apical margin very slightly concave (Fig. 48). Antennae elongate, first four segments in a ratio of about 23:5:14:13, segment eleven 2.2 X as long as thick; pubescence of flagellum pale and subappressed, erect setae short, sparse. WF .68 X WH, 1.44 X HE; ocelli rather small, DAO .15 X WF, OOL 1.22 X WOT. Eye tops removed from vertex crest by a distance equal to about .6 HE. Front alutaceous, moderately shining, with shallow punctures which are separated from one another by slightly more than their own diameters. Pro- and mesonota alutaceous, moderately shining, punctures numerous but small and shallow; notauli strong on anterior half of mesoscutum; basal furrow and lateral foveae of scutellum shallow. Propodeum short, only about 1.35 X as long as broad, in lateral view about twice as long as high; spiracles elongate-elliptical; disc with a strong median carina, with reticulate sculpturing basally and laterally. Mesopleurum with the callus shining, very weakly alutaceous, remainder of mesopleurum with large punctures. Discoidal vein of fore wing not deeply pigmented, arising a short way down on the transverse median vein (Fig. 53).

Paratypes. — TEXAS: 4 ♂♂, same data as type, 12-15 March 1945 [USNM, MCZ]; 3 ♂♂, San Antonio, Aug. 1942 (at light, E. S. Ross) [CAS, MCZ]; 1 ♂, Brownsville, Sept. 1942 (E. S. Ross) [CAS]; 1 ♂, Wharton, 24 June 1917 (J. C. Bradley) [CU].

Variation. — Size range is from 3.3 to 5.1 mm., LFW 2.5 to 3.9 mm. There is little variation in head measurements in the type series (Table 1). The Wharton specimen has distinctly paler antennae, the flagellum being chestnut-brown.

7. *PSEUDISOBRACHIUM RETTENMEYERI* new species

Holotype. — ♂, Barro Colorado Island, Canal Zone, 28 March 1955 (Carl Rettenmeyer) [KU].

Description.—Length 4.2 mm.; fore wing 2.7 mm. Head black, thorax dark reddish-brown, abdomen slightly paler, especially the basal segments; mandibles yellowish, teeth rufous; clypeus light brown; antennae medium brown, including scape; legs, including front coxae, bright yellowish-brown; wings lightly infuscated, veins and stigma dark brown. Mandibles with five teeth, basal tooth slightly stronger than third and fourth teeth. Clypeus rather broad basally, sides tapering to a truncate apex of moderate width (Fig. 44). Antennae with first four segments in a ratio of about 19:4:13:11, segment eleven about 1.6 X as long as thick; pubescence of flagellum light brown, coarse, erect setae numerous, many of them over half as long as thickness of flagellum. WF .7 X WH, 1.48 X HE; ocelli small, DAO .13 X WF; OOL 1.67 X WOT. Distance from eye tops to vertex crest equal to about .8 HE. Front strongly alutaceous, weakly shining, punctures small and inconspicuous. Pro- and mesonota strongly alutaceous, weakly punctate; notauli strong on anterior .6 of mesoscutum. Propodeum 1.4 X as long as wide, in lateral view about twice as long as high; spiracles elliptical, directed dorso-laterad; disc weakly sculptured, the sculpturing showing a weak tendency to form transverse striations. Characters of the mesopleurum and of the fore wing as described for the following species.

Paratypes.—CANAL ZONE: 1 ♂, same data as type [KU]; 1 ♂, Pacora, 13 May 1953 (F. S. Blanton) [USNM]. COSTA RICA: 1 ♂, Hamburg Farm, April (C. W. Dodge) [MCZ].

Variation.—The Pacora specimen is slightly larger than the type (LFW 2.9 mm.), the Barro Colorado paratype very small (LFW 2.2 mm.). In the Pacora specimen the antennae are light brown, the scape yellow-brown. In all other respects the paratypes closely resemble the type.

8. PSEUDISOBRACHIUM COOPERI new species

Holotype.—♂, Turrialba, Costa Rica, 22 June 1949 (K. W. Cooper) [USNM, No. 65152].

Description.—Length 3.7 mm.; LFW 2.7 mm. Head and thorax black, abdomen dark brown, suffused with lighter brown on sides basally; mandibles yellow, teeth rufous; antennae brown beyond the scape, which is black; front coxae black, legs otherwise light brown; wings lightly infuscated, veins and stigma dark brown. Mandibles with five teeth, basal three teeth small, subequal, forming a unit which is well set off from the apical two teeth (Fig. 12). Clypeus with a rounded, polished, median

apical prominence (Fig. 47). Antennae slender, first four segments in a ratio of about 20:4:11:10, segment eleven 1.9 X as long as thick, pubescence of flagellum coarse, semierect, erect setae unusually numerous. WF .69 X WH, 1.52 X HE; ocelli small, in a compact triangle far removed from eyes; DAO .12 X WF, OOL 1.83 X WOT. Vertex broadly rounded off far above tops of eyes, distance from eye tops to vertex crest nearly equal to HE. Front strongly alutaceous, weakly shining, with abundant shallow and rather inconspicuous punctures. Pro- and mesonota also strongly alutaceous and with abundant but shallow punctures; notauli present as thin lines on anterior .4 of mesoscutum. Propodeum about 1.4 X as long as wide, in lateral view about twice as long as high; spiracles elliptical, directed dorsad; median carina strong, dorsal surface with ridges which are reticulate basally, transverse posteriorly. Mesopleurum with the callus shining, barely alutaceous, remainder of this sclerite strongly alutaceous and with strong sculpturing. Discoidal vein of fore wing darkly pigmented, longer than basal vein, forming a straight line with median vein.

9. PSEUDISOBRACHIUM CLYPEATUM new species

Holotype. — ♂, Barro Colorado Island, Canal Zone, 4 Jan. 1929 (C. H. Curran) [AMNH].

Description. — Length 4.3 mm.; LFW 3.1 mm. Head black, thorax piceous, abdomen reddish-brown, sides of the basal segments suffused with light yellowish-brown; mandibles yellow, apices rufous; antennae brown; coxae, trochanters, and basal parts of femora bright straw-yellow; apices of femora and all of tibiae and tarsi yellow-brown; wings lightly infuscated, veins and stigma brown. Mandibles with five teeth, as shown in Figure 11. Clypeus broad apically, with a median tooth, the lateral angles prominent and slightly reflexed (Fig. 43). Antennae slender, first four segments in a ratio of about 24:5:15:14, segment eleven about twice as long as thick; pubescence of flagellum coarse, semierect, erect setae numerous, the longest ones over half as long as width of flagellum. WF .65 X WH, 1.34 X HE; ocelli small, far removed from eyes; DAO .13 X WF; OOL 1.6 X WOT. Vertex broadly rounded off far above the eye tops; distance from eye tops to vertex crest equal to about .8 HE. Front moderately shining, strongly alutaceous, with shallow punctures which are separated from one another by slightly more than their own diameters. Pro- and mesonota strongly alutaceous, weakly shining, with abundant shallow punctures;

notauli distinct on anterior .6 of mesoscutum; basal groove of scutellum rather broad and short, lateral foveae large, deep. Propodeum about 1.4 X as long as wide, in lateral view 2.2 X as long as high; spiracles elliptical, directed dorso-laterad; median carina rather long, dorsum of propodeum otherwise covered with delicate transverse ridges, shining. Mesopleural callus rather short and broad, remainder of mesopleurum strongly alutaceous and with strong punctures. Discoidal vein of fore wing interstitial with median vein, long, well-pigmented, in fact the discoidal cell completely outlined by weakly pigmented lines. Genitalia much as in other species and as shown in Figures 63, but both divisions of the parameres unusually slender.

Remarks.— There is a possibility that *zeteki*, described on a later page from a single female from Barro Colorado Island, is the female of *clypeatum*.

OCCIDENTALE Species-group

In this group are placed unusually elongate males possessing five-toothed mandibles. The mesopleural callus is often polished, but in general the callus is less well differentiated than in the *crassum* group. The species together range from central California to central Mexico and east to western Texas. There is very little structural variation within the group, and with one

TABLE II

Species and locality	No.	LFW	WF/HE	OOL/WOT	DAO/WF	Ant. 11 L/W
<u>occidentale</u>						
Tehama Co., Calif.	6	3.2 (2.4-3.7)	1.29 (1.23-1.36)	.71 (.54-.88)	.22 (.20-.24)	1.6 (1.4-1.8)
Mendocino Co., Calif.	2	3.6 (3.1-4.1)	1.26 (1.24-1.28)	.80 (.66-.94)	.19 (.18-.20)	2.0
Lake Co., Calif.	101	4.2 (3.4-4.9)	1.40 (1.29-1.50)	.94 (.86-1.0)	.19 (.18-.21)	2.1 (1.9-2.4)
Colusa Co., Calif.	4	4.0 (3.1-4.4)	1.20 (1.06-1.31)	.69 (.66-.70)	.25 (.20-.29)	1.9 (1.8-2.0)
Yolo Co., Calif.	64	3.4 (2.6-4.7)	1.28 (1.13-1.50)	.70 (.52-.88)	.22 (.17-.30)	1.8 (1.4-2.1)
Sacramento Co., Calif.	36	3.5 (2.8-4.2)	1.33 (1.05-1.45)	.73 (.43-.96)	.21 (.17-.31)	1.8 (1.5-2.0)
Solano Co., Calif.	2	4.1 (4.0-4.2)	1.14 (1.13-1.15)	.54	.28 (.26-.30)	2.2
Marin Co., Calif.	22	4.0 (3.1-4.3)	1.34 (1.21-1.47)	.96 (.85-1.1)	.19 (.17-.21)	2.2 (2.0-2.4)
Contra Costa Co., Calif.	1	2.8	1.53	.90	.17	1.6
Santa Clara Co., Calif.	3	4.6 (4.3-5.0)	1.28 (1.20-1.33)	.91 (.82-1.05)	.20 (.18-.23)	2.3 (2.1-2.6)
Los Angeles Co., Calif.	3	4.2 (4.1-4.3)	1.41 (1.37-1.45)	1.10 (1.06-1.12)	.19 (.18-.19)	2.1 (1.9-2.3)
Southeastern Arizona	3	3.7 (3.6-3.9)	1.25 (1.18-1.33)	.71 (.67-.75)	.22 (.21-.23)	1.7 (1.6-1.8)
<u>castaneum</u>						
San Diego, Calif.	7	2.5 (2.1-2.7)	.93 (.90-.95)	.63 (.57-.69)	.27 (.21-.32)	1.7 (1.4-1.9)
<u>nigricolum</u>						
Pachuca, Hidalgo	4	2.4 (2.2-2.5)	1.36 (1.30-1.42)	.90 (.77-1.07)	.20 (.18-.22)	1.6 (1.4-1.7)
Zimapan, Hidalgo	13	2.4 (2.1-2.7)	1.10 (.97-1.20)	.71 (.60-.82)	.25 (.22-.28)	1.7 (1.4-1.8)
Sombretete, Zacatecas	2	2.7	1.20 (1.16-1.23)	.68 (.63-.73)	.26 (.24-.27)	1.7 (1.4-1.9)
<u>matthewsi</u>						
Van Horn, Texas	10	1.9 (1.7-2.1)	1.08 (1.00-1.17)	.53 (.46-.61)	.27 (.23-.29)	1.3 (1.1-1.5)
<u>brunneum</u>						
Pachuca, Hidalgo	1	2.7	1.40	1.33	.15	1.2
Zimapan, Hidalgo	24	2.3 (2.1-2.7)	1.48 (1.40-1.56)	1.20 (1.10-1.40)	.16 (.14-.17)	1.2 (1.1-1.4)

exception the several forms seem to be allopatric (at least so far as the present very limited records indicate). This one exception is *brunneum*, the most distinctive member of the group, which occurs sympatrically with *nigriculum* in central Mexico. The latter species and all the other members of this group may be thought of as comprising a single superspecies which ranges throughout the arid regions of the southwestern United States and northern Mexico.

Females assigned tentatively to this group have four-toothed mandibles with the basal two teeth small and recessed along the inner margin.

10. PSEUDISOBRACHIUM OCCIDENTALE new species

Holotype. — ♂, Novato, Marin Co., Calif., 25 Aug. 1953 (H. L. Mathis) [CAS].

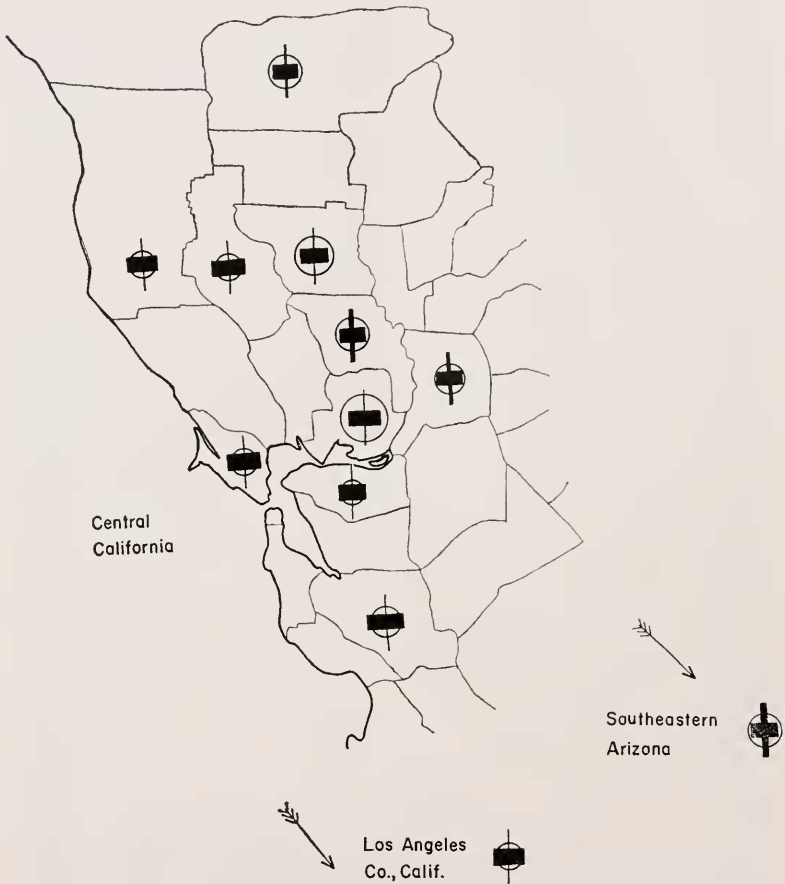
Description. — Length 5 mm.; LFW 4 mm. Head and thorax dark brownish-fuscous, almost black, abdomen bright chestnut brown, with weakly developed annulations of paler brown; coxae dark brown, femora and tibiae medium brown, tarsi light brown; antennal scape nearly black, flagellum medium brown; wings very weakly infuscated, veins and stigma brown. Mandibles with five teeth in an oblique series (Fig. 14). Clypeus tectiform medially, truncate apically. Antennae elongate, flagellum pubescent and with a few erect setae which on the basal segments are about half as long as width of flagellum, first four antennal segments in a ratio of about 11:3:5:5; segment eleven twice as long as thick. Front of moderate breadth, WF .65 X WH, 1.35 X HE; OOL subequal to WOT; ocelli in a small triangle, front angle less than a right angle, of moderate size, DAO .19 X WF. Vertex, in anterior view, rounded off well above eyes, distance from eye tops to vertex crest equal to about two-thirds the eye height. Front moderately shining, alutaceous, with small, shallow punctures. Pronotum and mesoscutum moderately shining, the latter with the punctures somewhat more sharply defined, although small; notauli very strong on anterior two-thirds of mesoscutum, absent behind; scutellum shining, disc nearly impunctate, basal and lateral foveae shallow. Propodeum very long, in dorsal view measuring 1.7 X as long as wide, in lateral view measuring 2.6 X as long as high; propodeal spiracles elongate, directed dorsad; disc with fine, reticulate ridges except nearly smooth caudad of end of median carina. Mesopleural callus strongly shining, non-alutaceous; remainder of mesopleura alutaceous, anteriorly

rather roughly punctate. Fore wing with discoidal vein rather strong, longer than transverse median vein, arising a short distance from the top of the latter vein (Fig. 55). Abdomen slender and elongate.

Paratypes. — CALIFORNIA: 6 ♂♂, Red Bluff, Tehama Co., 20 July 1956 (light trap, E. Yeomann) [UCD]; 1 ♂, Ukiah, Mendocino Co., 12 July 1935 (M. L. Jones) [CDAS]; 1 ♂ Hopland Grade, Mendocino Co., 5 May 1959 (S. M. Fidel) [UCD]; 100 ♂♂, Upper Lake, Lake Co., Aug. 1958 (light trap, R. E. Dolphin) [UCD, CAS, MCZ, CU, CM, INHS]; 1 ♂, Soda Bay, Lake Co., 25 July 1958 (light trap, R. E. Dolphin) [UCD]; 1 ♂, Arbuckle, Colusa Co., 14 July 1959 (light trap, J. Fowler) [UCD]; 3 ♂♂, College City, Colusa Co., June 1959 (light trap, J. Fowler) [UCD]; 25 ♂♂, 4.5-9 mi. W. Zamora, Yolo Co., June-July 1959 (light trap, J. Fowler) [UCD]; 20 ♂♂, 4 mi. SW. Dunnigan, Yolo Co., July 1959 (light trap, J. Fowler) [UCD]; 8 ♂♂, Winters & vic., Yolo Co., June-Aug. 1959 (light trap, J. Fowler); 3 ♂♂, 3 mi. NW. Yolo, June, July 1959 (light trap, J. Fowler) [UCD]; 4 ♂♂, Davis, July-Sept. [UCD]; 3 ♂♂, Woodland, 17 Aug. 1959 (light trap, J. Fowler) [UCD]; 1 ♂, Esparto, Yolo Co., 29 June 1959 (light trap, J. Fowler) [UCD]; 34 ♂♂, Fair Oaks, Sacramento Co., 12 Aug. 1933 (A. Bellue) [USNM, CDAS, CU]; 1 ♂, Sacramento, 14 July 1933 (H. H. Keifer) [CDAS]; 1 ♂, Rio Linda, 6 July 1958 (light trap, J. Fowler) [UCD]; 1 ♂, Rio Vista, Solano Co., 19 July 1959 (light trap, E. Mezger) [UCD]; 1 ♂, Dixon, 13 July 1956 (light trap, E. Mezger) [UCD]; 19 ♂♂, Novato, Marin Co., Aug.-Sept. (light trap, H. L. Mathis) [CAS, UCD, MCZ]; 1 ♂, Mill Valley, Marin Co., 28 Sept. 1953 (H. L. Mathis) [UCD]; 1 ♂, San Venetia, Marin Co., 10 Oct. 1953 (H. L. Mathis) [UCD]; 1 ♂, Danville, Contra Costa Co., 18 Aug. 1949 (F. X. Williams) [CAS]; 2 ♂♂, Los Gatos, Santa Clara Co., 1 Aug. 1933 (J. A. Kusche) [CAS]; 1 ♂, Alma, Santa Clara Co., 30 Aug. 1933 (H.H. Keifer) [CDAS]; 3 ♂♂, Glendale, Los Angeles Co., Sept.-Oct. 1951 (W. M. Schlinger) [UCD]. ARIZONA: 1 ♂, Cave Creek Canyon, Chiricahua mts., 25 Aug. 1927 5-6000 feet (J. A. Kusche) [CAS]; 1 ♂, Cochise Stronghold, Cochise Co., 2 Oct. 1954 (at light, Butler and Werner) [UA]; 1 ♂, Madera Canyon, Santa Rita mts., 2-4 Aug. 1959 (K. V. Krombein) [KVK].

Variation in males. — The 247 paratypes range in size from 2.9 to 6.0 mm., fore wing from 2.4 to 5.0 mm. There is considerable variation in width of the front, with specimens from one

locality often being fairly consistent in this character, but the over-all variation not strongly correlated with geography. Ocellar size and antennal width appear to vary clinically from west



Map 1. — Some aspects of geographic variation in males of *P. occidentale*. Horizontal bars represent the mean L_1/W for the eleventh antennal segment; see Table II for actual values and for range of variation. Mean ocellar size is superimposed upon this as a circle by taking the DAO/WF ratio, multiplying it by ten, and using the same scale as for antennal length. Vertical bars indicate whether the front is weakly (thin line), moderately (thick line), or strongly alutaceous (thick bar). It will be seen that in coastal localities the ocelli are small as compared to the antennal length and the front is weakly alutaceous; as one proceeds eastward, regardless of the latitude, there is a tendency for larger ocelli, shorter antennae, and a more alutaceous front.

to east, with specimens from coastal California having generally longer antennae and smaller ocelli than specimens farther inland (Table II and Map 1). Although most specimens have the front, thoracic dorsum, and mesopleural callus rather shining, as in the type, in many specimens from Yolo and Sacramento counties, California, these parts are less shining and more strongly alutaceous. The three specimens from southeastern Arizona are distinctly more heavily alutaceous than any others, and in these the mesopleural callus is weakly differentiated. Again, there may be a west-to-east cline in this character. Although the range of this species covers a considerable distance north-to-south, there are no discernible clines in this direction, specimens from Sacramento County, California, being more like those from southern Arizona than they are like those from Marin County, California, a relatively short distance west. This species is being collected in great numbers in light traps, and may provide an interesting study in intraspecific variation, particularly when it is possible to fill in some of the wide gaps in its known range.

Female (assigned here tentatively).—Stanford Univ., Calif., 22 Dec. 1909 [USNM].

Description of female.—Length of body 3.1 mm., of head .6 mm., of thorax 1.1 mm. Head castaneous, thorax light castaneous, abdomen yellowish-brown; mandibles light castaneous, teeth rufous; clypeus and scape light castaneous, flagellum dull yellowish-brown; legs wholly yellowish-brown. Mandibles slender, with four distinct teeth but third and fourth teeth drawn well back along inner margin, as figured for *obscurum* (Fig. 36). Clypeus broadly truncate (actually very slightly concave) apically; median carina strong, not quite reaching margin. Head 1.35 X as long as wide; sides parallel, arcuately contracted near posterior margin to a broad, straight vertex; occipital carina obsolete dorsally. Eyes small, amber-colored and therefore not contrasting strongly to the brownish head. Anterior part of front and sides of head striato-punctate and also obscurely alutaceous; posterior half of front smooth and shining between the punctures, which are elongate except more circular toward vertex; under surface of head alutaceous, punctures rather evenly spaced. Pronotal disc 1.4 X as long as its posterior width, about as long as maximum width of thorax; mesonotum 1.5 X as long as wide, .82 X as long as maximum width of thorax; propodeum 1.6 X as long as wide. Pronotal disc weakly alutaceous behind and on sides, otherwise smooth and shining; punctures widely spaced, absent only from midline. Mesonotum

obscurely alutaceous on sides, polished medially, with some weak punctures on sides. Propodeum polished dorsally, obscurely punctate, spiracles subcircular, directed dorso-laterally. Mesopleurum strongly alutaceous, punctures rather weak. Body, including legs, with abundant short, pale setae.

Other females. — CALIFORNIA: 1, same data as preceding [USNM]; 1, Crow Canyon, Alameda Co., 19 Feb. 1939 (K. S. Hagen) [CIS].

Variation in females. — The two specimens from Stanford University are very similar in size, color, and structure. The specimen from Alameda County is considerably larger, the head being .94 mm. long, the thorax 1.65 mm. long (the abdomen is missing). The thorax is rich castaneous like the head. The head is only 1.25 X as long as wide; antero-dorsally it is distinctly striate-punctate but hardly alutaceous, and ventrally it is barely alutaceous but with stronger punctures than in the Stanford University specimens. In thoracic structure the three specimens are nearly identical.

Remarks. — The only male *Pseudisobrachium* known to occur in the San Francisco Bay area is *occidentale*, which is not uncommon and rather variable in size. Therefore, it is most logical that these females belong with *occidentale*. While there is nothing about their structure which contraindicates this assignment, there is still much to be learned about the distribution of western *Pseudisobrachium*, so this association must be considered tentative.

11. PSEUDISOBRACHIUM CASTANEUM new species

Holotype. — ♂, San Diego, Calif. (Ricksecker) [USNM, No. 65153].

Description. — Length 3 mm; LFW 2.7 mm. Thorax and abdomen chestnut-brown, head also of this color but top and front somewhat suffused with fuscous; legs, including coxae, uniformly light brown; antennae brown, somewhat darker than legs but lighter than body; wings hyaline, veins and stigma pale brown. Mandibles with five teeth. Anterior margin of clypeus very weakly concave. Antennae elongate, with pubescence and erect setae as in preceding species; first four segments in a ratio of about 15:6:9:8; segment eleven 1.6 X as long as thick. Front very narrow. WF only .55 X WH, .95 X HE; ocelli moderately large, OOL only .6 X WOT, DAO .22 X WF; front angle of ocellar triangle slightly less than a right angle.

Vertex rounded off a short distance above eye tops, distance from eye tops to vertex crest about $.4 \times HE$. Front shining, alutaceous, punctures shallow, rather numerous. Pro- and mesonota also shining and with numerous but rather shallow and inconspicuous punctures; notauli weakly impressed on anterior half of mesoscutum; scutellum with basal groove narrow, lateral foveae well defined. Propodeum measuring $1.65 \times$ as long as wide, in lateral aspect $2.5 \times$ as long as high; spiracles small, elliptical, directed laterad; most of dorsum of propodeum smooth and shining, median carina sharply defined. Mesopleural callus strongly shining, barely alutaceous; remainder of mesopleura shining, very weakly punctate and without other strong sculpturing. Fore wing with the discoidal vein longer than the transverse median vein, but only very weakly pigmented, arising a short distance down on transverse median vein (Fig. 56).

Paratypes. — 6 ♂♂, all same data as type [USNM, MCZ].

Variation. — Body length varies from 2.6 to 3.0 mm., wing length from 2.1 to 2.7 mm. Coloration is quite uniform throughout the series. Means and range of variation for several characters are presented in Table II.

12. PSEUDISOBRACHIUM MATTHEWSI new species

Holotype. — ♂, Van Horn, Culberson Co., Texas, 22 July 1956 (at light, E. G. Matthews) [MCZ, No. 30272].

Description. — Length 2.2 mm.; LFW 1.8 mm. Head dark brownish-fuscous; thorax and abdomen dark chestnut brown except sides of basal abdominal segments paler; legs light brown except coxae somewhat darker; antennae brown, darker than legs but lighter than body; wings hyaline, veins and stigma light brown. Mandibles with five teeth, basal three teeth small, subequal in size and shape. Anterior margin of clypeus truncate. Antennae of moderate length, with conspicuous pubescence and a few very short erect setae; first four segments in a ratio of about 26:9:11:10; segment eleven $1.2 \times$ as long as thick. WF $.58 \times$ WH, $1.1 \times$ HE; ocelli rather large, in a broad triangle, front angle slightly greater than a right angle; OOL $.5 \times$ WOT; DAO $.27 \times$ WF. Distance from tops of eyes to vertex crest about $.6 \times$ HE; top of vertex only weakly rounded, almost straight across. Front alutaceous, shining, with shallow punctures. Pronotum and mesoscutum also shining but strongly alutaceous, the scutellum however nearly smooth; punctures of thoracic dorsum

shallow and inconspicuous; notauli strongly impressed on anterior third of mesoscutum. Propodeum 1.6 X as long as broad, in lateral aspect 3 X as long as high; spiracles small, subcircular, directed laterad; surface of propodeum mostly smooth and shining, median carina long and sharply defined. Mesopleural callus shining, barely alutaceous; remainder of mesopleura alutaceous but without strong sculpturing or punctures. Fore wing discoidal vein very weakly pigmented, about as long as transverse median vein and arising a short distance from top of that vein.

Paratypes. — 9 ♂♂, all same data as type [CU, MCZ, USNM].

Variation. — The paratypes range in size from 2.0 to 2.4 mm. and show no noteworthy differences in color from the type. Mean and range of variation for certain characters are presented in Table II. There appears to be some variation in the shape of the ocellar triangle, but without exception the front angle is at least as great as a right angle.

Female (assigned here tentatively). — El Paso Co., Texas, 22 July 1937 (W. F. Turner and W. H. Anderson, from soil in peach orchard) [USNM].

Description of female. — Length of body 1.8 mm., of head .43 mm., of thorax .8 mm. Head and thorax medium brown, abdomen light yellowish-brown; antennae and legs straw-colored. Mandibles with four well-defined teeth, about as figured for *obscurum* (Fig. 36). Clypeus slightly emarginate apically. Head rather slender, 1.42 X as long as wide; sides subparallel, converging behind to a straight vertex. Eye a single facet which is only slightly paler than the head. Front strongly polished, with small punctures which are separated, on the average, by about twice their own diameters, surface between punctures without any sculpturing whatever; under side of head also strongly polished and with small, rather evenly spaced punctures. Pronotal disc elongate, 1.6 X as long as its posterior width; mesonotum also elongate, about twice as long as wide, nearly as long as maximum width of thorax; propodeum subovoid, 1.65 X as long as wide. Pronotum strongly polished, with weak, widely spaced punctures, weakly alutaceous along posterior margin; mesonotum strongly polished in middle, otherwise weakly alutaceous; propodeum also strongly polished, weakly alutaceous posteriorly, mesonotum and propodeum both with only a few weak punctures on the sides. Sides of mesopleurum weakly alutaceous, weakly punctate. Body and legs with abundant short, pale setae.

13. PSEUDISOBRACHIUM NIGRICULUM new species

Holotype. — ♂, Zimapán, Hidalgo, Mexico, 11-14 June 1951 (at light, H. E. Evans) [MCZ, No. 30273].

Description. — Length 2.8 mm.; LFW 2.6 mm. Head dark brownish-fuscous, nearly black, thorax and abdomen dark brown, abdomen with lighter brown markings latero-posteriorly on basal segments; legs and antennae medium brown; wings hyaline, veins and stigma light brown. Mandibles with five teeth, the basal three teeth small, subequal. Anterior margin of clypeus truncate. Antennae of moderate length, rather coarsely pubescent and with numerous erect setae which toward the base are half as long as the thickness of the antennae; first four segments in a ratio of about 18:5:7:7, segment eleven 1.5 X as long as thick. WF .58 X WII, 1.1 X HE; ocelli rather large, OOL .6 WOT; DAO .28 X WF; front angle of ocellar triangle slightly less than a right angle. Vertex extended well above eye tops, where it is arched only weakly; distance from tops of eyes to vertex crest .67 X HE. Front weakly shining, strongly alutaceous, with moderately strong punctures which are separated from one another by from two to three X their own diameters. Pronotum and mesoscutum shining, moderately alutaceous, rather weakly punctate; notauli strong on the anterior fourth of the mesoscutum, absent behind; scutellum polished, basal groove and lateral foveae well defined but shallow. Propodeum 1.6 X as long as broad, in lateral view 3 X as long as high; spiracles small, elliptical, directed dorso-laterad; dorsal surface of propodeum shining, weakly alutaceous in front, smooth behind; median carina strong. Mesoplural callosus strongly polished, smooth; remainder of mesopleura also shining, but weakly alutaceous and weakly punctate. Fore wing with discoidal vein slightly longer than the transverse median vein, arising near the top of this vein, moderately well pigmented.

Paratypes. — HIDALGO: 12 ♂♂, same data as type (H. E. Evans, P. D. Hurd) [MCZ, USNM, CU, CIS]; 4 ♂♂, Pachuca, 29 July 1954 (J. G. Chilcote) [CNC]. ZACATECAS: 2 ♂♂, 15 km. E. of Sombrerete, 28-31 July 1951 (H. E. Evans) [MCZ].

Variation. — The paratypes vary in size from 2.2 to 3.0 mm. Generally they agree well with the type in coloration, but several specimens, including both of those from Zacatecas, have the thorax and abdomen nearly black like the head, and the legs and antennae are also darker in these specimens. There are no marked structural differences between the Zacatecas specimens and those from Hidalgo (see Table II). Throughout both

series some variation can be noted in the strength of the punctures and microscopic sculpturing.

Remarks.—All specimens in the type series were taken at Coleman lanterns during the evening hours. The type locality was in desert at about 6000 feet, the Zacatecas location in arid grassland at about 7000 feet.

14. PSEUDISOBRACHIUM BRUNNEUM new species

Holotype.— δ , Zimapán, Hidalgo, Mexico, 11-14 June 1951 (at light, H. E. Evans) [MCZ, No. 30274].

Description.—Length 2.6 mm.; LFW 2.4 mm. Dark brown, except base and apex of abdomen suffused with lighter brown; antennae dark brown; legs medium brown, a little paler apically; wings hyaline, stigma brown, veins light brown. Mandibles with five teeth, the basal three teeth small, subequal (Fig. 15). Clypeus truncate apically, its median carina arched in profile. Antennae of moderate length, first four segments in a ratio of about 32:9:12:10, segment eleven 1.3 X as long as thick; flagellum with coarse, subappressed pubescence and a few erect setae which toward the base are about half as long as thickness of flagellum. WF .66 X WH, 1.5 X HE; ocelli small, OOL 1.2 X WOT, DAO .17 X WF; front angle of ocellar triangle less than a right angle. Vertex extended far above eye tops, where it is more or less squared off; distance from eye tops to vertex crest about equal to eye height. Front shining, moderately alutaceous, with shallow punctures. Pronotum and mesoscutum of much the same character, latter with notauli impressed on anterior third; scutellum strongly polished medially, basal groove and lateral foveae strong. Propodeum 1.8 X as long as broad, in lateral view 2.7 X as long as high; spiracles small, elliptical, directed dorsad; median carina strong on anterior two-thirds of disc, disc wholly alutaceous but more shining behind. Mesopleura shining, weakly alutaceous and weakly punctate, callus somewhat elevated but not differing otherwise from remainder of pleurum. Fore wing with discoidal vein weakly pigmented, about as long as transverse median vein and arising just below top of latter vein (about as in Fig. 56).

Paratypes.—HIDALGO: 23 δ δ , same data as type (H. E. Evans, P. D. Hurd) [MCZ, USNM, CU, CIS, CAS, OEE, INHS]; 1 δ , Pachuca, 29 July 1954 (J. G. Chillcott) [CNC].

Variation.—The paratypes vary in size from 2.2 to 2.9 mm. Color of the body and legs varies from rich chestnut-brown to dark brownish-fuscous with the head and thorax almost black.

In some specimens the punctures of the front are deep and well-defined (although not large), while in others they are scarcely evident. The distance from eye tops to the vertex crest varies from .75 to 1.0 X HE. Variation in other measurements is not great (Table II).

Remarks.— All specimens were collected at light along with specimens of *nigriculum*. Although the two species are very similar in size and color, there are several differences, *brunneum* having shorter antennae, less protruding eyes, and smaller ocelli.

OBSCURUM Species-group

The males of this group have a relatively compact body form as in the *crassum* group, but the mesopleural callus is weakly differentiated and alutaceous. Two large species with dark wings and punctate mesopleura may represent a link with the *crassum* group. The remaining five species are minute, deserticolous species with pale wings and non-punctate pleura. In some males of this group the basal mandibular tooth is somewhat thicker than the adjacent teeth, approaching the condition in the *prolongatum* group. The females of only one species, *obscurum*, are known, and these can be assigned here only tentatively. These females differ in no outstanding features from those of the preceding species-group.

TABLE III

Species and locality	No.	LFW	WF/HE	OOL/WOT	DAO/WF	Ant. 11 L/W
<i>obscurum</i>						
Culberson Co., Texas	11	2.8 (2.3-3.1)	1.21 (1.16-1.28)	.60 (.54-.65)	.22 (.20-.24)	1.3 (1.2-1.5)
Chihuahua, Chih.	1	2.5	1.00	.55	.26	1.2
Cochise Co., Ariz.	2	2.6	1.11	.62	.22 (.21-.23)	1.3
Graham Co., Ariz.	1	2.6	1.18	.47	.25	1.4
Tucson, Ariz.	1	2.0	1.07	.50	.25	1.2
Superior, Ariz.	101	2.2 (1.6-2.9)	1.10 (.98-1.20)	.57 (.42-.65)	.23 (.21-.26)	1.2 (1.1-1.4)
Oracle, Ariz.	3	2.8 (2.3-3.0)	1.11 (1.07-1.14)	.54 (.50-.58)	.23 (.22-.24)	1.3 (1.2-1.4)
Santa Rosalia, Baja Cal.	1	2.3	1.03	.58	.22	1.4
Comondu, Baja Cal.	1	2.4	1.15	.61	.22	1.3
San Miguel, Baja Cal.	1	2.6	1.30	.65	.18	1.3
Venancio, Baja Cal.	6	2.5 (2.1-2.7)	1.22 (1.16-1.28)	.62 (.61-.65)	.20 (.18-.23)	1.2 (1.1-1.4)
La Paz, Baja Cal.	2	2.2 (2.0-2.4)	1.16 (1.15-1.21)	.65 (.58-.72)	.20 (.19-.21)	1.1
Santiago, Baja Cal.	4	2.2 (1.9-2.5)	1.10 (1.04-1.15)	.64 (.60-.67)	.21 (.20-.22)	1.2 (1.0-1.3)
Mitraflores, Baja Cal.	1	2.3	1.08	.64	.22	1.3
<i>otosum</i>						
Superior, Ariz.	3	2.0 (1.9-2.2)	1.48 (1.44-1.52)	.95 (90-1.00)	.15	1.3
<i>michoacanum</i>						
Tuxpan, Michoacan	1	3.0	1.60	1.70	.13	1.5
<i>carolinianum</i>						
Grahamville, S. C.	1	3.3	1.30	1.12	.15	1.4
Miami, Fla.	0	3.2 (2.9-3.4)	1.12 (1.05-1.23)	.76 (.70-.82)	.20 (.19-.23)	1.4 (1.3-1.4)
<i>pallidum</i>						
Yuma Co., Ariz.	2	1.8	1.03 (1.06-1.10)	.74	.20	1.0
<i>gibbosum</i>						
Hidalgo Co., N. Mex.	1	1.6	1.68	1.10	.15	1.1
<i>testacelipes</i>						
San Marcos, Nicaragua	1	1.8	1.43	1.40	.14	1.1

15. PSEUDISOBRACHIUM MICHOCANUM new species

Holotype. — ♂, Tuxpan, Michoacan, Mexico, 6000 feet elevation, 6 July 1959 (H. E. Evans) [MCZ, No. 30275].

Description. — Length 3.6 mm.; LFW 3.0 mm. Head and thorax black; abdomen shining black, except first tergite margined with brown; scape black, flagellum dark brown; apical half of mandibles rufous; legs dark brown, beyond the middle of the tibiae medium brown; wings lightly infuscated, covered with brown setulae, veins and stigma dark brown. Mandibles with five teeth, basal three teeth about equally developed (Fig. 18). Clypeus truncate apically. Antennae elongate, first four segments in a ratio of about 16:5:11:11, segment eleven 1.5 X as long as thick; pubescence light brown, erect setae numerous, some of them nearly half as long as thickness of flagellum. Front broad, WF .7 X WH, 1.6 X HE; ocelli small, far removed from eyes, forming an angle in front that is less than a right angle; DAO .13 X WF; OOL 1.7 X WOT. Vertex extended far above eye tops, distance from tops of eyes to vertex crest, subequal to eye height. Front alutaceous, moderately shining, with shallow punctures which are separated from one another by from 1 to 2 times their own diameters. Pro- and mesonota wholly alutaceous, including disc of scutellum, and with abundant small punctures which are fairly dense on sides of mesoscutum; notauli impressed on anterior .4 of mesoscutum. Propodeum 1.45 X as long as broad, in lateral view 2.1 X as long as high; spiracles elliptical, directed dorso-laterad; dorsal surface with rather strong reticulate sculpturing. Mesopleurum with callus wholly alutaceous, not strongly convex; anterior portion of mesopleurum with many large punctures. Discoidal vein of fore wing arising a short distance down on transverse median vein, pigmented to about length of basal vein.

Remarks. — The only known specimen of this species was taken on oak foliage at about 11 in the morning in open, bushy country. The small ocelli and dark coloration suggest that this is a diurnal species.

16. PSEUDISOBRACHIUM CAROLINIANUM new species

Holotype. — ♂, Grahamville, South Carolina, 1 Aug. 1952 (J. Shuler) [Coll. H. K. Townes].

Description. — Length 4.5 mm.; LFW 3.3 mm. Head and thorax black, abdomen dark brown, basal tergite margined with paler brown; mandibles yellow-brown, teeth rufous; antennae

wholly ferruginous; legs bright castaneous except front coxae slightly infuscated; wings hyaline, veins and stigma brown. Mandibles with five teeth, basal tooth slightly thicker and more rounded than the third and fourth teeth. Clypeus truncate apically. Antennae of moderate length, first four segments in a ratio of about 23:5:11:10; segment eleven about 1.4 X as long as thick; pubescence and setae pale, the latter rather numerous and mostly about a third as long as the flagellar width. WF .65 X WH, 1.3 X HE; DAO .16 X WF; OOL 1.12 X WOT; ocelli forming an angle in front which is slightly less than a right angle. Vertex extended above eye tops a distance equal to about .8 X HE. Front alutaceous, weakly shining, with large, shallow punctures which are separated from one another by from 1 to 2 times their own diameters. Pro- and mesonota moderately shining, alutaceous, the punctures moderately strong; notauli strong on anterior half of mesoscutum. Propodeum measuring 1.3 times as long as broad; spiracles elongate-elliptical, directed laterad; disc with fairly strong sculpturing which shows some tendency to form transverse striae. Mesopleural callus alutaceous, not strongly convex; anterior portion of mesopleurum with many large punctures. Fore wing with discoidal vein about as long as basal vein, weakly pigmented.

Paratypes.—8 ♂♂, Miami, Florida, 14 July 1950 (F. G. Butchers) [CNC, MCZ, USNM].

Variation.—The paratypes differ from the type in having consistently larger ocelli and a narrower front; the punctures of the body also tend to be somewhat weaker. It is conceivable that these represent a distinct species, but I think not.

17. PSEUDISOBRACHIUM GIBBOSUM new species

Holotype.—♂, 8 mi. N. of Rodeo, Hidalgo Co., New Mexico, 4000 feet elevation, 8 Sept. 1959 (at light H. E. Evans) [MCZ, No. 30276].

Description.—Length 2.8 mm.; LFW 1.6 mm. Head, thorax, and abdomen dark brownish-fuscous; mandibles ferruginous; antennae dark brown; legs dark brown except tarsi and apical part of tibiae paler; wings very pale, stigma brown but veins nearly colorless. Mandibles with five teeth, the basal three teeth small, subequal. Clypeus broad basally, its sides tapering to a rather narrowly truncate apex. Antennae short, first four segments in a ratio of about 13:4:4:4; flagellar segments, except the last, only very slightly longer than thick, pubescence of flagellum pale and rather conspicuous although short, erect setae

short and few in number. Front broad, WF .74 X WH, 1.68 X HE; ocelli small, DAO .15 X WF, OOL 1.1 X WOT; front angle of ocellar triangle approximately a right angle. Vertex extended above eye tops a distance about equal to eye height. Front strongly shining, very weakly alutaceous, with a few strong punctures on upper half. Pro- and mesonota also strongly shining, the mesoscutum with a few small but deep punctures; notauli weakly impressed on anterior half of mesoscutum. Propodeum short, measuring 1.3 X as long as broad; spiracles small, subcircular, opening laterad; median carina present, disc with fine reticulate sculpturing over entire dorsal surface, stronger anteriorly. Mesopleurum shining and very weakly alutaceous except on the extreme anterior part, which is heavily sculptured; central portion of mesopleurum convex, not only the callus but the areas beneath and behind it, with a single large pit in the center. Discoidal vein of fore wing absent.

18. *PSEUDISOBRACHIUM OTIOSUM* new species

Holotype. — ♂, Superior, Pinal Co., Arizona, 7-17 July 1948 (H. K. Gloyd)⁴ [USNM, No. 65159].

Description. — Length 2.8 mm.; LFW 1.9 mm. Head nearly black; thorax and abdomen dark brown; apical half of mandibles yellowish, teeth rufous; antennae light yellowish-brown, including scape; front coxae brown, legs otherwise straw-yellow; wings hyaline, clothed with pale setulae, stigma light brown, veins nearly colorless. Mandibles with five teeth, the basal three teeth small, subequal. Clypeus truncate apically. Antennae rather short, first four segments in a ratio of about 14:4:6:6; flagellar segments each slightly longer than thick, segment eleven 1.3 X as long as thick; pubescence of flagellum pale, erect setae pale, numerous, less than half as long as width of flagellum. WF .7 X WH, 1.52 X HE; ocelli small, DAO .15 X WF, OOL equal to WOT; ocelli forming an angle in front which is slightly less than a right angle. Vertex extended above eye tops a distance equal to about .8 X HE. Front strongly alutaceous, weakly shining, with shallow, inconspicuous punctures. Pro- and mesonota alutaceous, weakly punctate, moderately shining, notauli impressed only on the anterior .2 of mesoscutum. Propodeum

⁴This is the data given on the label of the type, except that the collector's name is given as D. K. G. Lloyd. Almost certainly this specimen was taken at a light trap by H. K. Gloyd at the Boyce Thompson Southwestern Arboretum, 4 mi. W. of Superior, as I have seen much other material taken by him there on those dates [INHS].

rather short, measuring 1.3 X as long as broad, in lateral view 2.2 X as long as high; spiracles small, elliptical, directed dorsad; median carina well developed, disc shining, with weak reticulate sculpturing. Mesopleurum wholly alutaceous, without strong punctures and with the callus poorly differentiated. Discoidal vein of fore wing absent.

Paratype.—ARIZONA: 1 ♂, same data as type [MCZ]; 1 ♂, Boyce Thompson Southwestern Arboretum, 4 mi. W. Superior, 28 Sept. 1949 (light trap, B. W. Benson) [INHS].

Variation.—One paratype is slightly larger, measuring 3 mm. in length, the fore wing 2.2 mm. In one paratype the third and fourth mandibular teeth are much smaller than the basal tooth, while in the second paratype the fourth tooth is so minute that the mandibles appear four-toothed except upon very close inspection.

19. PSEUDISOBRACHIUM TESTACEIPES Kieffer

Pseudisobrachium testaceipes Kieffer, 1906, Berlin Ent. Zeitschr., 50:240.

[Type: ♂, San Marcos, Nicaragua (Coll. Baker) (Pomona College, Claremont, Calif.)].—Kieffer, 1914, Das Tierreich, 41:480.

Description of holotype.—Length 2.5 mm.; LFW 1.8 mm. Head piceous, thorax dark castaneous, abdomen dark castaneous except light yellowish-brown on sides of basal segments; apical two-thirds of mandibles yellowish-brown, teeth rufous; scape light brown, flagellum dull castaneous; legs pale castaneous; tarsi straw-colored; wings hyaline, stigma light brown, veins amber; setulae of wing membrane brownish. Mandibles with five teeth, basal three teeth small, subequal. Clypeus narrowly truncate apically (actually very weakly arcuately concave). Antennae short, first four segments in a ratio of about 17:5:7:6, each flagellar segment very slightly longer than thick, segment eleven 1.1 X as long as thick; flagellar pubescence coarse, semi-erect, erect setae numerous and prominent. WF .68 X WH, 1.43 X HE; ocelli small, DAO .14 X WF; ocelli in a compact triangle, OOL 1.4 X WOT; vertex extended above eye tops a distance equal to about .7 X HE. Front alutaceous, moderately shining, punctures shallow, inconspicuous. Pro- and mesonota (including scutellar disc) strongly alutaceous, almost beaded, however rather shining, punctures shallow and inconspicuous; notauli weakly impressed on anterior .4 of mesoscutum. Propodeum about 1.4 X as long as broad; disc with some short carinae arising from base in addition to usual median carina, posterior part of disc

alutaceous, somewhat shining; spiracles elliptical, directed dorsad. Mesopleural callus strongly convex, shining although moderately alutaceous, remainder of mesopleurum alutaceous, obscurely punctate. Fore wing with discoidal vein present as a pigmented streak about as long as the basal vein.

Remarks.—I have seen no specimens of this species other than the type. It is a reasonably distinctive species, but has doubtless escaped attention from collectors because of its small size.

20. PSEUDISOBRACHIUM PALLIDUM new species

Holotype.— δ , Wellton, Yuma Co., Arizona, 9 Aug. 1917 (Cornell Univ. Biol. Exp., J. C. Bradley) [CU].

Description.—Length 2.5 mm., LFW 1.8 mm. Entire body light brown; mandibles light yellowish-brown; antennae light yellowish-brown, flagellum with a tinge of rufous; legs straw-colored; wings very pale, setulae pale, stigma tinged with brown, veins colorless. Mandibles with basal three teeth small, basal tooth with its inner margin arching into the inner mandibular margin (Fig. 17). Clypeus broad basally, tapering to a rather narrowly truncate apex. Antennae short, first four segments in a ratio of about 3:1:1:1, segment three about 1.2 X as long as broad, segment eleven about as long as broad; flagellar pubescence pale, subappressed, erect setae virtually absent. Front very narrow, WF .59 X WH, 1.06 X HE; ocelli of moderate size, DAO .20 X HE; OOL .74 X WOT. Eyes somewhat bulging, vertex elevated above eyes a distance equal to about half HE. Front shining though regularly alutaceous, punctures weak and scarcely noticeable. Pro- and mesonota alutaceous although somewhat shining, without noticeable punctures; notauli absent. Propodeum very short, about 1.35 X as long as wide; disc shining, with weak sculpturing basally; spiracles small, subcircular, directed laterad. Mesopleurum rather convex, shining but wholly alutaceous, callus not well differentiated; punctures inconspicuous. Discoidal vein of fore wing absent.

Paratype.—1 δ , same data as type [CU].

Variation.—The single paratype is very similar to the type in every respect, including size.

21. PSEUDISOBRACHIUM OBSCURUM new species

Holotype.— δ , Pine Springs, Culberson Co., Texas, 13-16 July 1955 (at light, E. G. Matthews) [MCZ, No. 30278].

Description.—Length 4.6 mm.; LFW 3.1 mm. Head and thorax black, abdomen dark brown, with indistinct banding with paler brown toward base; apical half of mandibles yellowish, teeth rufous; scape brown, flagellum bright reddish-brown; front coxae nearly black, middle and hind coxae and femora medium brown, remainder of legs light brown; wings hyaline, covered with pale setulae, stigma light brown, veins nearly colorless. Basal three teeth of mandibles subequal (Fig. 16). Clypeus truncate apically. Antennae rather short, first four segments in a ratio of about 18:5:10:9, segment eleven 1.5 X as long as thick; antennal pubescence extremely fine, pale, and closely appressed, erect setae short and few in number. WF .66 X WH, 1.20 X HE; ocelli slightly enlarged, DAO .21 X WF; front angle of ocellar triangle slightly greater than a right angle, OOL only .6 X WOT. Vertex broadly rounded, almost squared off, distance from eye tops to vertex crest equal to somewhat more than half HE. Front alutaceous, weakly shining, punctures numerous but small and inconspicuous. Pronotum and mesoscutum alutaceous, moderately shining, with numerous small punctures; notauli weakly impressed on anterior fourth of mesoscutum; scutellar disc shining. Propodeum about 1.3 X as long as broad; spiracles small, elliptical, directed dorsad; disc alutaceous but without other sculpturing except for median carina. Mesopleurum alutaceous, weakly punctate in front, callus not strongly differentiated. Discoidal vein of fore wing distinct, although very weakly pigmented like the rest of the veins.

Paratypes.—TEXAS: 10 ♂♂, same data as type [MCZ, CU, USNM]. CHIHUAHUA: 1 ♂, Chihuahua, 12 Aug. 1951 (at light, H. E. Evans) [MCZ]. ARIZONA: 2 ♂♂, 1 mi. S. Portal, Cochise Co., 12 Aug., 5 Sept. 1959 (at light, H. E. Evans) [CU, MCZ]; 1 ♂, Post Canyon, Pinaleno Mts., Graham Co., 5-6000 feet, 16 July 1917 (W. M. Wheeler) [MCZ]; 1 ♂, Tucson, 15 July 1937 (Bryant) [CAS]; 3 ♂♂, Oracle, Pinal Co., 25 July 1917 (W. M. Wheeler) [MCZ]; 101 ♂♂, Boyce Thompson Southwestern Arboretum, 4 mi. W. Superior, Pinal Co., May-Oct. (at light, H. K. Gloyd and B. W. Benson) [INHS, USNM, MCZ, CU]. BAJA CALIFORNIA: 1 ♂, 25 mi. S. Santa Rosalia, 25 July 1938 (Michelbacher & Ross) [CAS]; 1 ♂, Comondu, 22 July 1938 (Michelbacher & Ross) [CAS]; 1 ♂, 5 mi. S. San Miguel, 20 July 1938 (Michelbacher & Ross) [CAS]; 6 ♂♂, Venancio, 17 July 1938 (Michelbacher & Ross) [CAS, MCZ]; 2 ♂♂, La Paz, 7 Oct. 1941 (Ross & Bohart) [CAS]; 4 ♂♂, Santiago, 8 July 1938 (Michelbacher & Ross) [CAS]; 1 ♂,

5 mi. S. Miraflores, 10 July 1938 (Michelbacher & Ross) [CAS].

Variation in males.—The 135 paratypes range in size from 2.1 to 4.4 mm., fore wing from 1.6 to 3.1 mm. In some of the smaller Arizona specimens the head and thorax are much more shining and less alutaceous than in the type and most other specimens. In some Arizona specimens the basal mandibular tooth is thicker than the third and fourth teeth, more as in Figure 17. Some of the Arizona specimens have the abdomen light brown, occasionally the whole body light brown; these may, of course, be somewhat teneral. In the specimen from Chihuahua the antennae are darker than usual, while in one of the two specimens from Cochise County, Arizona, the antennae are very dark brown and the legs darker than usual. Head measurements do not exhibit an undue amount of variation (Table III).

Female (assigned here tentatively).—Sacaton, Pinal Co., Arizona, 1935, from soil in cotton field (L. D. Christenson) [USNM].

Description of female.—Length of body 1.8 mm., of head .5 mm., of thorax .9 mm. Head castaneous; thorax pale castaneous; abdomen, legs, antennae, clypeus, mandibles, and sides of head anterior to eyes, light yellowish-brown. Mandibles rather slender, basal two teeth small and situated back along inner margin of mandible (Fig. 36). Clypeus truncate apically, median ridge strong, not prolonged beyond margin. Head 1.35 X as long as wide; sides nearly parallel, weakly convergent behind to a broad, straight vertex; occipital carina obsolete dorsally. Eye a fairly large, whitish facet which contrasts well with the brownish head. Front punctate except along a narrow median band, punctures generally a bit longer than wide, separated from one another mostly by about their own diameters; surface of front weakly alutaceous between punctures, though rather strongly shining; under surface of head weakly alutaceous, with small, rather evenly spaced punctures. Pronotal disc 1.6 X as long as its posterior width, about as long as maximum width of thorax; mesonotum 1.4 X as long as wide, .68 X as long as maximum width of thorax; propodeum 1.5 X as long as wide. Pro- and mesonota weakly alutaceous, moderately shining, with small, widely spaced punctures which are largely absent medially; propodeum weakly alutaceous, obscurely punctate on sides; spiracles subcircular, opening dorso-laterad. Mesopleurum weakly alutaceous, punctures numerous but not very strong. Body with abundant pale setae; coxae, femora, and tibiae each with a few fairly long pale setae.

Other females.—ARIZONA: 4, same data as preceding [USNM, MCZ]; 1, Huachuca mts., 14 Sept. 1938 (R. H. Crandall) [UA].

Variation in females.—Variation in size, color, and standard measurements in this series is slight. One specimen from Sacaton is smaller than the other three, the head measuring only .42 mm., thorax .75 mm. In this specimen the head and thoracic dorsum are only very obscurely alutaceous and therefore more strongly shining than in the other three. The specimen from the Huachuca mts. is slightly larger than any of the others, the body measuring 2.6 mm., head .63 mm., thorax 1.1 mm.; in all other respects it agrees very well with description presented above.

Remarks.—The males of this species bear a close resemblance to those of *flavinervis* Fouts, another nocturnal, deserticolous species which occurs over much the same range. This resemblance extends to the shape of the ocellar triangle and nature of the antennal pubescence as well as to features which usually characterize desert species (pale wings, large ocelli, etc.). Pre-



Map 2.—Distribution of *P. obscurum*, males indicated by solid circles, supposed females by hollow circles. Distribution of *P. arenarium*, males indicated by solid squares, supposed females by hollow squares.

sumably these resemblances must be the result of convergence, since on the basis of mandibular structure the two forms belong to different species-groups. In general, the front is less distinctly punctate in *obscurum* than in *flavinervis*. The distribution of this species is shown on Map 2.

PROLONGATUM Species-group

Within this complex of three species the usually reliable character of the mandibular dentition breaks down. The basal mandibular tooth of the male is broad, its inner margin arching into the inner margin of the mandible. The third and fourth teeth are small, in some specimens of two of the species very small, even connate, and in a number of specimens of *prolongatum* (about 10 per cent of those examined) these two teeth are

TABLE IV

Species and locality	No.	LFW	WF/HE	OOL/WOT	DAO/WF	Ant. 11 L/W
<u>aztecum</u>						
Cuernavaca, Mor.	1	4.1	1.23	.60	.27	1.6
<u>arenarium</u>						
Pine Barrens, N. J.	5	4.3 (3.8-5.1)	.96 (.93-1.01)	.61 (.54-.70)	.25 (.23-.26)	1.9 (1.7-2.0)
Kill Devil Hills, N. C.	3	3.4 (3.1-3.6)	.98 (.96-.99)	.65 (.61-.67)	.24 (.23-.25)	1.6 (1.5-1.8)
Tryon, N. C.	1	3.9	1.00	.65	.22	1.8
Clarke Co., Ga.	1	3.6	1.07	.68	.22	2.0
"Georgia"	2	3.4 (3.2-3.6)	.96 (.95-.97)	.62 (.60-.64)	.23	1.6 (1.5-1.7)
Orlando, Fla.	1	4.1	1.24	.89	.18	1.6
Camp Rucker, Ala.	2	4.3 (4.2-4.4)	.96 (.95-.97)	.69 (.68-.70)	.23 (.22-.24)	1.7 (1.6-1.8)
Camp Shelby, Miss.	2	4.2 (4.1-4.3)	.99 (.98-1.00)	.69 (.68-.70)	.23 (.22-.24)	1.9
Urbana, Ill.	15	4.3 (3.8-4.8)	.98 (.95-1.02)	.64 (.55-.71)	.25 (.24-.26)	1.8 (1.6-1.9)
<u>prolongatum</u>						
Norway Bay, Que.	4	3.4 (3.2-3.7)	1.65 (1.63-1.69)	1.42 (1.36-1.48)	.14	1.6 (1.5-1.7)
Ottawa, Ont. and vic.	2	3.6 (3.5-3.7)	1.63 (1.60-1.66)	1.29 (1.26-1.31)	.14	1.6 (1.5-1.7)
St. John, N. B.	2	3.1	1.67 (1.65-1.73)	1.41 (1.40-1.42)	.14	1.6
Bridgetown, Nova Scotia	49	3.3 (2.6-3.7)	1.58 (1.52-1.64)	1.30 (1.26-1.33)	.14 (.13-.15)	1.6 (1.5-1.8)
Bar Harbor, Me.	1	3.4	1.72	1.32	.14	1.7
Stratton, Me.	1	3.0	1.68	1.52	.14	1.8
Houghton, Me.	1	3.6	1.70	1.38	.14	1.8
Westerly, R. I.	1	3.1	1.55	1.25	.15	1.6
Lake George, N. Y.	1	3.8	1.75	1.52	.13	1.7
Oneonta, N. Y.	1	3.7	1.62	1.33	.13	1.6
Princeton, N. J.	1	3.6	1.51	1.32	.14	1.7
Mt. Holly Spr., Pa.	1	3.5	1.52	1.32	.13	1.5
Plummer's Isl., Md.	96	3.3 (2.5-3.7)	1.60 (1.50-1.75)	1.35 (1.24-1.43)	.14 (.12-.15)	1.7 (1.5-1.8)
Takoma Park, Md.	7	3.1 (2.5-3.7)	1.66 (1.62-1.70)	1.30 (1.24-1.39)	.13 (.12-.14)	1.6 (1.5-1.7)
Washington, D. C.	1	3.7	1.54	1.18	.14	1.6
Bolivar, W. Va.	1	2.6	1.63	1.35	.13	1.8
Hamrick, N. C.	2	3.0 (2.9-3.1)	1.68 (1.61-1.75)	1.41 (1.34-1.48)	.14	1.6 (1.5-1.7)
Crabtree Mds., N. C.	14	3.5 (2.9-3.9)	1.66 (1.62-1.72)	1.45 (1.35-1.58)	.14 (.13-.15)	1.6 (1.5-1.7)
Mt. Pisgah, N. C.	12	3.6 (3.0-4.1)	1.67 (1.63-1.70)	1.50 (1.37-1.64)	.14 (.13-.15)	1.7 (1.5-1.8)
Mt. Mitchell, N. C.	4	3.6 (3.2-3.9)	1.65 (1.60-1.70)	1.47 (1.32-1.60)	.14	1.6
St. Louis City, Iowa	1	3.0	1.56	1.46	.12	1.6
Chillicothe, B. C.	1	3.5	1.58	1.22	.13	1.9
Tenino, Wash.	1	3.6	1.62	1.28	.13	1.5
Union Gap, Wash.	1	2.7-	1.60	1.15	.14	-
Spokane Falls, Wash.	1	3.5	1.56	1.25	.14	1.5

actually fused. Thus this group is distinctly intermediate between the three species-groups having five-toothed mandibles and the two having four-toothed mandibles.

22. PSEUDISOBRACHIUM AZTECUM new species

Holotype. — ♂, Cuernavaca, Morelos, Mexico, 5500 feet elevation, 6 June 1959 (at light, H. E. Evans) [MCZ, No. 30279].

Description. — Length 5.3 mm.; LFW 4.1 mm. Head and thorax black, abdomen dark brown, basal segments suffused with paler; apical half of mandibles ferruginous; antennae brown; legs bright yellowish-brown except front coxae infuscated; wings subhyaline, veins brown, stigma dark brown. Mandibles with five teeth, the fifth tooth broad, continuous with the inner margin (Fig. 19). Clypeus truncate apically. Antennae fairly long, first four segments in a ratio of about 14:4:7:7, segment eleven 1.6 X as long as thick; pubescence of flagellum pale and appressed, erect setae short, sparse, and inconspicuous. WF .62 X WH, 1.23 X HE; ocelli large, anterior ocellus nearly .2 mm. in diameter, DAO .27 X WF; OOL .6 X WOT. Vertex extended above eye tops a distance equal to only slightly over half eye height. Front alutaceous, moderately shining, with abundant small punctures. Pro- and mesonota strongly shining, non-alutaceous, with abundant small punctures which are much more sparse medially; notauli strong on anterior .6 of mesoscutum. Propodeal disc dull and with fine sculpturing in front, more smooth and shining behind; spiracles elongate, directed dorsad; propodeum 1.5 X as long as broad. Mesopleurum shining, non-alutaceous, the anterior portion punctate. Discoidal vein of fore wing arising a short distance down on the transverse median vein, pigmented to about length of basal vein.

23. PSEUDISOBRACHIUM ARENARIUM new species

Holotype. — ♂, Lebanon State Forest, Burlington Co., New Jersey, 19 Aug. 1958 (at light, H. E. Evans and D. F. Beneway) [MCZ, No. 30280].

Description. — Length 5.5 mm.; LFW 4.3 mm. Head and thorax black, abdomen brown, basal segments suffused with light brown; apical half of mandibles light brown, teeth rufous; antennae medium brown; legs bright castaneous, except front coxae blackish; wings faintly tinged with brown, veins and stigma brown. Mandibles with five teeth, third and fourth teeth small, fifth tooth very broad and blunt (Fig. 20). Clypeus truncate apically. Antennae fairly long, first four segments in a ratio of about 14:3:8:7, segment eleven 1.9 X as long as thick; pubescence of flagellum pale, rather rough and suberect, erect setae numerous, most of them about half as long as thickness of flagellum. Front very narrow, WF .52 X WH, .93 X HE;

ocelli rather large, anterior ocellus measuring about .15 mm. in diameter, DAO .26 X WF; OOL .54 X WOT. Vertex extended above eye tops a distance equal to about half HE. Front alutaceous, weakly shining, with large, shallow punctures which are separated from one another by from one to two times their own diameters. Pro- and mesonota alutaceous, punctate, weakly shining; notauli sharply impressed on anterior half of mesoscutum; scutellar disc shining. Propodeum 1.5 X as long as broad, its disc weakly sculptured except at the end of the median carina, where there is a smooth and shining area; spiracles elongate-elliptical, directed dorsad. Mesopleurum alutaceous and with strong though shallow punctures, except that the callus is well-defined and somewhat shining. Discoidal vein of fore wing arising a short distance down on transverse median, pigmented to slightly more than length of basal vein (as figured for *prolongatum*, Fig. 57).

Paratypes.—NEW JERSEY: 2 ♂♂, same data as type [MCZ]; 2 ♂♂, Wrangle Brook Road, Lakehurst, N. J., 26 Aug., 7 Sept. 1955-56 (D. M. Anderson, J. G. Franclemont) [CU]. NORTH CAROLINA: 3 ♂♂, Kill Devil Hills, Dare Co., 27-29 July 1955 (at light, K. V. Krombein) [KVK]; 1 ♂, Tryon, 25 July (at light, W. F. Fiske) [USNM]. GEORGIA: 1 ♂, Clarke Co., 25 Sept. 1959 (Richards) [CU]; 2 ♂♂, no further data [ANSP]. ALABAMA: 2 ♂♂, Camp Rucker, 12 Dec. 1942 (J. G. Franclemont) [USNM]. MISSISSIPPI: 2 ♂♂, Camp Shelby, nr. Hattiesburg, 30 July, 2 Sept. 1943 (C. D. Michener) [AMNH]. ILLINOIS: 15 ♂♂, Urbana, Aug.-Oct. (at light, C. A. Hart, G. T. Reigel) [INHS, MCZ, CU].

Other specimens not designated paratypes: 3 ♂♂, without data [INHS]; 1 ♂ tentatively assigned here from FLORIDA: Orlando, July 1927 (O. C. McBride, in light trap) [USNM].

Variation in males.—The 30 paratypes vary in size from 4.2 to 6.8 mm., fore wing from 3.1 to 5.1 mm. (Table IV). The abdomen is lighter than the head and thorax in all specimens and in some is light reddish-brown. The mesopleural callus varies from moderately to very strongly shining. Some of the variation shown in Table IV appears to be clinal, specimens from the North having, for example, generally larger ocelli than those from the South. The specimen from Florida which I assign here, tentatively, has unusually small ocelli and unusually wide front. Among the other specimens, the smallest ocelli and widest front occurs in some of those from Georgia and North Carolina. It seems probable that the Florida specimen, different as it seems, merely represents the extreme of one or more clines.

Female (assigned here tentatively). — St. Charles, Mo., 1949, "in vial with *Stig [matomma] pallipes*" (M. Talbot) [USNM].

Description. — Length of body 4 mm., of head .92 mm., of thorax 1.7 mm. Entire body castaneous, head slightly darker than thorax, abdomen slightly paler than thorax; mandibles, clypeus, and scape light castaneous, flagellum dull yellowish-brown; legs bright yellowish-brown. Mandibles with three teeth, as figured for *prolongatum* (Fig. 39), clypeus broadly subtruncate, its median carina sharp but not reaching apical margin. Head 1.15 X as long as wide, sides nearly parallel, posteriorly arcuately convergent to a broad, nearly straight vertex. Eyes each consisting of a single pale, fairly conspicuous facet. Front with a median impunctate streak, otherwise with close, elongate punctures, somewhat alutaceous, on lower sides somewhat striatopunctate; under surface of head strongly alutaceous and rather weakly punctate. Pronotal disc 1.3 X as long as its posterior width; mesonotum 1.4 X as long as wide; propodeum about 1.4 X as long as wide. Pronotal disc weakly alutaceous and with fairly strong punctures except medially, where it is smooth and shining. Mesonotum and propodeum both wholly but rather weakly alutaceous, both with a number of fairly strong punctures on the sides; punctate lateral parts of propodeum actually as large in area as median impunctate strip. Mesopleurum alutaceous, weakly punctate. Hairs of body and legs numerous, pale, of moderate length.

Other females. — PENNSYLVANIA: 1, Philadelphia, 20 May 1939 (W. L. Brown, from nest of *Proceratium* sp.) [USNM]. NORTH CAROLINA: 1, Durham, June 1945, Duke forest (A. S. Pearse) [INHS].

Variation in females. — The females from Pennsylvania and North Carolina are slightly smaller than the one from Missouri (head length .88 and .82 mm., thorax length 1.6 and 1.5 mm., respectively). The resemblance to the Missouri specimen is very close in every respect, including measurements.

Remarks. — The females assigned here tentatively have much in common with *prolongatum*, and it is possible that they fall within the range of variation of that species. However, on the basis of the available material they do appear to show constant differences from *prolongatum* and to inhabit a generally more southerly range, suggesting that they may be the females of *arenarium* (Map 2). It is interesting to note that two of the three records for this species indicate an association with ponerine ants, while several records for *prolongatum* suggest a relationship with formicine and myrmicine ants.

24. PSEUDISOBRACHIUM PROLONGATUM (Provancher)

Bethylus prolongatus Provancher, 1881, Nat. Canad., 12: 265. [Type: ♂ (not female as stated), Cap Rouge, Que. (Quebec Prov. Museum, yellow label no. 944)].

Perisemus prolongus Ashmead, 1893, Bull. U. S. Nat. Mus., 45: 72.

Isobrachium magnum Ashmead, 1893, Bull. U. S. Nat. Mus., 45: 36. [Type: ♂, Spokane Falls, Wash. (USNM no. 10068)]. New synonymy.

Isobrachium myrmecophilum Ashmead, 1893, Bull. U. S. Nat. Mus., 45: 37. [Type: ♀, Beatty, Pa. (USNM no. 10069) (♂ allotype misassociated)]. New synonymy.

Isobrachium mandibulare Ashmead, 1893, Bull. U. S. Nat. Mus., 45: 38. [Type: ♀, Retreat, Haywood Co., N. C. (USNM no. 14046) (♂ allotype misassociated)]. New synonymy.

Isobrachium montanum Ashmead, 1893, Bull. U. S. Nat. Mus., 45: 39. [Type: ♀, Helena, Mont., April 30, from nest of *Formica rufibarbis* (H. G. Hubbard) (USNM no. 14047) (♂ allotype misassociated)]. New synonymy.

Pseudisobrachium montanum Kieffer, 1908, Genera Insect., 76: 24. — Kieffer, 1914, Das Tierreich, 41: 479. — Fouts, 1928, Proc. Ent. Soc. Wash., 30: 122.

Pseudisobrachium magnum Kieffer, 1908, Genera Insect., 76: 24. — Kieffer, 1914, Das Tierreich, 41: 479. — Fouts, 1928, Proc. Ent. Soc. Wash., 30: 122.

Pseudisobrachium myrmecophilum Kieffer, 1908, Genera Insect., 76: 24. — Kieffer, 1914, Das Tierreich, 41: 479. — Fouts, 1928, Proc. Ent. Soc. Wash., 30: 122.

Pseudisobrachium mandibulare Kieffer, 1908, Genera Insect., 76: 24. — Kieffer, 1914, Das Tierreich, 41: 480. — Fouts, 1928, Proc. Ent. Soc. Wash., 30: 122.

Pseudisobrachium rugosulum Fouts, 1928, Proc. Ent. Soc. Wash., 30: 124. [Type: ♂, Mount Holly Springs, Pa., Aug. 12, 1920 (swept from wheat stubble, R. Fouts) (USNM no. 62551)]. New synonymy.

Pseudisobrachium agilis Whittaker, 1928, Trans. Ent. Soc. London, 76: 386. [Type: ♂, Chilliwack, Br. Col., Aug.-Oct., 1926-27 (O. Whittaker) (British Museum)]. New synonymy.

Pseudisobrachium prolongatus Krombein, 1958, U. S. Dept. Agri. Monogr. 2, first suppl., p. 97.

Plesiotype. — ♂, "R.C." [Rideau Canal, Ottawa, Ont.], Aug. 22, 1894 (Harrington) [CNC].

Description. — Length 4.3 mm.; LFW 3.7 mm. Head and thorax piceous, abdomen shining brown, on sides of basal segments light yellowish-brown; apical half of mandibles yellowish-brown, teeth rufous; antennae castaneous; front coxae brown, legs otherwise bright yellowish-brown; fore wing very faintly tinged with brown, veins and stigma dark brown. Mandibles

with five teeth, third and fourth teeth small and close together, fifth tooth broad, its margin continuous with that of inner mandibular margin (Fig. 21). Antennae with first four segments in a ratio of about 23:6:11:11, segment three 1.7 X as long as thick, segment nine 1.5 X as long as thick; flagellar pubescence pale, rather coarse, erect setae numerous, many of them nearly half as long as diameter of flagellum. WF .71 X WH, 1.6 X HE; ocelli small, DAO .14 X WF; OOL 1.26 X WOT; ocelli in a compact triangle, front angle less than a right angle. Vertex broadly rounded a distance above eyes tops subequal to eye height. Front and vertex strongly alutaceous, weakly shining, with weak punctures which for the most part are separated by from 1 to 1.5 X their own diameters. Pronotum alutaceous, with many weak punctures. Mesoscutum alutaceous, punctures rather strong and numerous, on the sides separated by no more than their own diameters; notauli fairly strong on anterior .6 of mesoscutum; scutellar disc strongly shining. Propodeum 1.5 X as long as wide; median carina long; disc with weak, irregular sculpturing, spiracles elliptical, directed laterad. Mesopleurum with callus convex, shining, weakly alutaceous; remainder of mesopleurum alutaceous, anteriorly with strong, close punctures. Discoidal vein of fore wing arising a short distance down on transverse median vein, pigmented to a distance exceeding length of basal vein (Fig. 57).

Males examined. — QUEBEC: 4, Norway Bay, 26-31 Aug. 1938 (Shewell, Hobbs) [CNC]; 1, Aylmer, 18 Sept. [CNC]. ONTARIO: 1, Rideau Canal, Ottawa, 22 Aug. (Harrington) [CNC]. NEW BRUNSWICK: 2, St. John, 9-18 Sept. (A. G. Leavitt) [USNM]. NOVA SCOTIA: 49 ♂♂, Bridgetown, 2 Sept.-1 Oct. (G. E. Sanders) [CNC]. MAINE: 1, Bar Harbor, 1 Oct. 1941 (A. E. Brower) [USNM]; 1, Stratton, Franklin Co., 19 Aug. 1945 (J. C. Bradley) [CU]; 1, Houghton, 18 Aug. 1945 (J. C. Bradley) [CU]. RHODE ISLAND: 1, Westerly, 8 Sept. 1937 (M. Chapman) [HKT]. NEW YORK: 1, Oneonta, 2 Sept. 1935 (H. K. Townes) [HKT]; 1, Lake George, 30 Aug. 1893 (J. L. Zabriskie) [MCZ]. NEW JERSEY: 1, Princeton, 28 Sept. 1945 (K. W. Cooper) [USNM]. MARYLAND: 96, Plummer's Isl., 29 Aug.-26 Sept. 1958-60, one on *Solidago* (K. V. Krombein, H. E. Evans) [MCZ, USNM, KVK]; 7, Takoma Park, July-Oct. (H. & M. Townes) [HKT]. DISTRICT OF COLUMBIA: 1, Washington, 8 Sept. 1952 (R. Boettcher) [USNM]. WEST VIRGINIA: 1, Bolivar, 19 Sept. 1942 (H. K. Townes) [HKT]. NORTH CAROLINA: 12, Mt. Pisgah, 5000-5749 feet, 2-5 Sept. (H. & M. Townes) [HKT]; 14, Crabtree

Mds., Yancey Co., 21 Aug. 1950 (H. & M. Townes) [HKT]; 4, Mt. Mitchell, 4000-6500 feet, 17-26 Aug. 1950 (H. & M. Townes) [HKT]; 2, Hamrick, 17 Aug. 1950 (H. & M. Townes) [HKT]. IOWA: 1, Sioux City (C. N. Ainslie) [USNM]. WASHINGTON: 1, Tenino, 25 Sept. 1897 (A. P. Morse) [USNM]; 1, Spokane Falls [USNM]; 1, Union Gap, 27 July 1942 (L. J. Lipovsky) [KU]. BRITISH COLUMBIA: 1, Chilliwack, Aug.-Oct. 1926-7 (O. Whittaker) [Coll. R. M. Fouts].

Variation in males.—The 207 males examined exhibit a size range from 3.0 to 5.5 mm., fore wing 2.5 to 4.1 mm. The legs are bright yellowish-brown in the Ottawa plesiotype described above, in the single male from Iowa, and in most specimens from the Atlantic coastal plain from Maine to District of Columbia; otherwise they tend to be suffused with brown, most particularly in specimens from the Pacific Northwest and the Southern Appalachians. As shown in Table IV, the ocellar triangle tends to be less far removed from the eyes in specimens from the Pacific Northwest, most far removed in specimens from the southern Appalachians (but exceptions are not uncommon). In occasional specimens from the Northeast and from the Appalachians, the mesopleural callus is less prominent and only weakly shining. The most striking variation is in the mandibles. In most specimens the third and fourth teeth are separate, although small (as in Fig. 20). In a few specimens (including some from eastern Canada, New York, and Maryland) they are connate (Fig. 21). In eight of the specimens examined, these teeth are completely fused so that the mandibles are in fact four-toothed as they are in members of the species-groups which follow (Fig. 22). These eight specimens are from New York (Oneonta), Pennsylvania (Mt. Holly Springs, type of *rugosulum* Fouts), and North Carolina (Hamrick and Mt. Pisgah). Dr. I. H. H. Yarrow of the British Museum (Natural History) has examined the type of *agilis* Whittaker, from British Columbia, and writes that in this specimen the mandibles are four-toothed. In a topotypic paratype in the collection of R. M. Fouts, they appear to be weakly five-toothed, although the mandibles are worn and it is difficult to be certain of this.

Plesiallotype.—♀, Toronto, Ontario, 24 April 1894 [CNC].

Description of female.—Length 4 mm., LH .85 mm., LT 1.7 mm. Head and thorax castaneous, abdomen light castaneous; mandibles, clypeus, and antennae light castaneous; legs bright yellowish-brown. Mandibles with three teeth, basal tooth rather

small (Fig. 39). Clypeus broadly subtruncate, median carina strong but not quite reaching margin. Head 1.2 X as long as wide, sides weakly arcuate, head width greatest about midway, behind this sides more convergent to vertex, which is straight; occipital carina absent dorsally. Eyes indicated by small, pale brown spots. Front with an impunctate streak medially, otherwise with rather dense, elongate punctures, anteriorly rather strongly striato-punctate; surface between punctures moderately shining, somewhat alutaceous; under surface of head more strongly alutaceous, punctures rather evenly spaced. Pronotal disc 1.4 X as long as its posterior width; mesonotum 1.3 X as long as wide; propodeum 1.5 X as long as wide. Pronotal disc shining, weakly alutaceous behind, with abundant small punctures except medially; mesonotum bare and shining medially, laterally weakly alutaceous and with some small punctures; disc of propodeum strongly polished, with a few weak punctures on the extreme sides; spiracles circular, directed dorso-laterally. Mesopleurum strongly alutaceous on sides, weakly punctate. Body and legs with numerous pale setae.

Females examined. — ONTARIO: 1, Toronto, 24 April 1894 [CNC]; 1, Eastern part [CNC]. NEW HAMPSHIRE: 1, Pike, on *Picea* (E. J. Kraus) [USNM]. MASSACHUSETTS: 2, Lexington, 5 June 1955 (in nests of *Acanthomyops*, W. L. Brown) [MCZ]; 3, Forest Hills, May (Mann, Williams) [USNM]; 1, Lynn Woods Res., 12 Oct. 1949, (rotten log, K. Christiansen) [USNM]. CONNECTICUT: 1, West Rock Ridge, New Haven, in moss, 24 June 1950 (P. Bellinger) [USNM]. NEW YORK: 1, Tuxedo, 30 May 1925 (in clump of grass, Wm. T. Davis) [MCZ]; 1, Ithaca, 1 Oct. 1957 (soil sample, E. F. Menhinick) [CU]. PENNSYLVANIA: 2, Beatty [USNM, MCZ]. DELAWARE: 1, Christiana, 31 May 1953 (tree hole, R. S. Howard) [MCZ]. DISTRICT OF COLUMBIA: 6, Washington, May, July, Aug., one in nest with *Camponotus pennsylvanicus* [USNM]. VIRGINIA: 1, Falls Church, 18 May (N. Banks) [MCZ]; 1, Vienna, 25 Sept. 1927 (leaf litter, J. C. Bridwell) [USNM]; 2, Ocoquan, 23 April 1925 (W. M. Mann) [USNM]. NORTH CAROLINA: 1, Duke Forest, Durham, 14 April 1945 (in litter, A. S. Pearse) [INHS]; 1, 4 mi. N. Cherokee, 2000 ft., 29 May 1957 (Berlese sample, W. R. M. Mason) [CNC]; 1, Haywood Co. [USNM]. KENTUCKY: 1, Bowen, 8 May 1947 [INHS]. ILLINOIS: 1, Oakwood, 29 Sept. 1933 (in old hickory log, H. H. Ross) [INHS]; 1, Little Grassy Lake, Williamson Co., 10 Aug. 1958 (in litter, W. L. Brown)

[MCZ]. IOWA: 2, Iowa City [USNM]. NORTH DAKOTA: 1, Walsh Co., 23 June 1950 (with *Formica* sp., W. E. LaBerge) [USNM]. MONTANA: 1, Helena, 30 April (from nest of *Formica rufibarbis*, H. G. Hubbard) [USNM]; 1, Assiniboine, April (with *Formica rufibarbis*) [USNM].

Variation in females.—Of the 35 females before me, the smallest is 3.4 mm. long, head .68 mm., thorax 1.3 mm.; the largest is 5.2 mm. long, head 1.0 mm., thorax 1.9 mm. The color of the head and thorax varies from dark castaneous to pale castaneous, in the latter case scarcely any darker than the abdomen. The specimen described above is about average in both size and color. In some specimens the head is somewhat more parallel-sided, head length about 1.3 X head width. The mandibles of most specimens resemble Figure 39, but in some the third tooth is relatively weak, and in a few the inner mandibular margin is sufficiently undulate so as to suggest a very weak fourth tooth (as in Fig. 37).

Remarks.—I have studied the types of Ashmead's species *myrmecophilum*, *mandibulare*, and *montanum* and can find no noteworthy differences between them. The evidence that these



Map 3.—Distribution of *P. prolongatum*, males indicated by solid circles, females by hollow circles. Distribution of *P. flavinervis*, males indicated by solid triangles, supposed female by a hollow triangle.

females go with *prolongatum* is purely circumstantial, based largely on a coincidence of ranges (Map 3) plus the rather large size of both males and females as compared with sympatric species. While I am reasonably sure that this association of sexes is correct, it is to be hoped that males and females will someday be taken in closer association than they have so far.

I have not studied the type of Provancher's *prolongatum*, but O. Peek, K. V. Krombein, and W. R. M. Mason have all seen the type and sent me their notes on it. Dr. Mason specifically checked several characters and compared the specimen with drawings which I sent him. The type has five-toothed mandibles and in every way compares closely with the plesiotype described above. The type is lacking the abdomen, hind legs, middle legs except coxae, right fore wing, and tips of antennae.

This is the most northerly in distribution of any species of the genus, the more southerly records (North Carolina) all being from moderate to high altitudes. It is partially sympatric with *ashmeadi* and to a more limited extent with several other species, but in the colder parts of its range it is the only representative of the genus. The relatively large size of the species plus the fact that it is reasonably common in the northeastern United States and eastern Canada probably accounts for its having been described so many times.

CARBONARIUM SPECIES-GROUP

To this group are assigned nine species, two of them relatively common eastern species, the remaining seven apparently uncommon species occurring in western United States, Mexico, and Central America. Not only are species differences in this group decidedly unspectacular, but the group as a whole is only weakly separable from specimens of the preceding group having four-toothed mandibles and from certain species of the *rufiventre* group, particularly *flaviventre*. This is the most difficult section of the genus, and I have sometimes been rather arbitrary in deciding what to consider a species, particularly with respect to the rather limited western material.

25. PSEUDISOBRACHIUM CARBONARIUM (Ashmead)

Epyris carbonarius Ashmead, 1893, Bull. U. S. Nat. Mus., 45: 59. [Type: ♂, Washington, D. C. (USNM no. 14063)].

Holepyris carbonarius Kieffer, 1906 [In André, Spec. Hymen. Eur., 9: 341].

— Kieffer, 1914, Das Tierreich, 41: 388.

Pseudisobranchium carbonarius Krombein, 1958, U. S. Dept. Agri. Monogr. 2, first suppl., p. 97.

Plesiotype. — ♂, Bowie, Maryland, 27 Aug. 1944 (H. & M. Townes) [HKT].⁵

Description. — Length 4 mm.; LFW 3.3 mm. Head and thorax piceous, abdomen shining reddish brown, paler basally and apically; mandibles yellowish-brown, teeth rufous; antennae wholly bright yellowish-brown with a tinge of rufous; legs bright yellowish-brown except middle and hind coxae slightly darker and fore coxae nearly piceous; wings subhyaline, stigma brown, veins amber. Mandibles with four teeth, the basal tooth broad, not separated from inner margin (as in Fig. 23). Clypeus with its truncate apical margin about equal to length of third antennal segment. Antennae with first four segments in a ratio of about 26:6:10:10, segment three and segment eleven each about 1.4 X as long as thick; flagellar pubescence pale, moderately coarse, erect setae numerous but mostly less than half as long as thickness of flagellum. Front very broad, WF .74 X WH, 1.8 X HE;

TABLE V

Species and locality	No.	LFW	WF/HE	OOL/WOT	DAO/WF	Ant. 11 L/W
<u>carbonarium</u>						
Maryland and D. C.	19	2.7 (2.4-3.3)	1.80 (1.67-1.94)	1.56 (1.45-1.70)	.11 (.10-.13)	1.3 (1.2-1.5)
Virginia	5	2.7 (2.4-3.0)	1.85 (1.78-1.91)	1.57 (1.50-1.71)	.11	1.3
West Virginia	2	2.6 (2.4-2.8)	1.80 (1.73-1.82)	1.58 (1.54-1.62)	.12	1.4
Table Rock, S. C.	14	2.7 (2.1-3.2)	1.80 (1.73-1.90)	1.62 (1.53-1.69)	.13 (.12-.14)	1.4
Greenville, S. C.	3	2.5 (2.3-2.7)	1.70 (1.65-1.75)	1.67 (1.64-1.70)	.12	1.3
Tigerville, S. C.	2	2.9 (2.8-3.0)	1.86 (1.80-1.92)	1.57 (1.54-1.60)	.12	1.3
Pinnacle Pk., Ga.	1	3.0	1.95	1.76	.10	1.4
Elgin, Ala.	1	2.5	1.78	1.50	.12	1.3
Illinois	7	2.5 (2.2-3.0)	1.79 (1.70-1.93)	1.57 (1.46-1.74)	.12 (.11-.13)	1.5 (1.4-1.6)
Onaga, Kansas	1	3.0	1.84	1.46	.13	1.5
<u>minimum</u>						
Grant Co., N. Mex.	1	2.3	1.47	1.20	.14	1.0
Cochise Co., Ariz.	1	3.0	1.70	1.35	.12	1.2
Yavapai Co., Ariz.	1	2.3	1.58	1.38	.13	1.2
<u>minutissimum</u>						
Las Cruces, N. Mex.	1	1.7	1.50	1.17	.15	1.0
Tucson, Ariz.	2	1.5 (1.3-1.7)	1.72 (1.68-1.76)	1.47	.12	1.0
Punta Lobos, Baja Cal.	1	1.6	1.65	1.44	.12	1.1
Cuernavaca, Morelos	1	1.9	1.57	1.26	.12	1.1
Yepocapa, Guatemala	1	2.0	1.53	1.52	.13	1.2
<u>flavicornis</u>						
La Ceiba, Honduras	2	2.4 (1.9-2.8)	1.49 (1.46-1.52)	1.24 (1.18-1.30)	.14	1.0
Granada, Nicaragua	1	2.7	1.50	1.22	.14	1.0
<u>navajo</u>						
Cocconino Co., Ariz.	1	2.8	1.48	.94	.14	1.2
Yavapai Co., Ariz.	1	2.7	1.61	1.03	.14	1.2
<u>hurdi</u>						
Canutillo, Durango	6	2.9 (2.6-3.2)	1.82 (1.75-1.90)	1.15 (1.06-1.23)	.13 (.12-.14)	1.1 (1.0-1.3)
<u>krombeini</u>						
Albuquerque, N. Mex.	1	2.9	1.52	1.06	.15	1.3
White Sands, N. Mex.	1	2.7	1.48	1.00		1.3

⁵ I have studied the type specimen of this species, but it is in rather poor condition; I have therefore elected to base my description on a specimen compared with the type.

ocelli small, in a compact triangle far removed from eyes, DAO .11 X WF, OOL 1.46 X WOT. Distance from tops of eyes to vertex crest slightly greater than HE. Front weakly shining, very strongly alutaceous, actually beaded in appearance, punctures very shallow and inconspicuous. Pro- and mesonota, including scutellar disc, also strongly alutaceous and obscurely punctate; notauli present on anterior .4 of mesoscutum. Propodeum about 1.35 X as long as broad, disc wholly covered with fine, reticulate ridges, median carina strong; sides of propodeum also with fine sculpturing; spiracles elliptical, directed dorsad. Mesopleurum wholly strongly alutaceous, callus scarcely elevated or differentiated; anterior part of mesopleurum with shallow punctures. Discoidal vein of fore wing arising a short distance down on the transverse median vein, strong basally, then weakened but extending as a pigmented line for a distance greater than length of basal vein (much as in *ashmeadi*, Fig. 58).

Specimens examined. — MARYLAND: 1 ♂, Bowie, 27 Aug. 1944 (H. & M. Townes) [HKT]; 5 ♂♂, Takoma Park, 7-11 Sept. 1942-43 (H. & M. Townes) [HKT]; 12 ♂♂, Plummer's Island, Sept.-Oct. (Krombein, Viereck, Evans) [USNM, KVK, MCZ]. DISTRICT OF COLUMBIA: 1 ♂, Washington [type, USNM]. VIRGINIA: 2 ♂♂, Rosslyn, Aug., Nov. [USNM]; 1 ♂, Falls Church, Aug. [USNM]; 1 ♂, Dunn Loring, Aug. [HKT]; 1 ♂, Vienna, June (J. C. Bridwell) [USNM]. WEST VIRGINIA: 1 ♂, Cheat Mts., June [CM]; 1 ♂, Philippi, Sept. (G. E. Wallace) [CM]. SOUTH CAROLINA: 14 ♂♂, Table Rock, 17 Aug. 1952 (G. & L. Townes) [HKT]; 3 ♂♂, Greenville, Aug., Oct. [HKT]; 2 ♂♂, Tigerville, 26 Aug. 1930 (Oman, Tuthill) [KU]. GEORGIA: 1 ♂, Pinnacle Pk., Rabun Co., 20 Aug. 1913 [CU]. ALABAMA: 1 ♂, Elgin, 6 July 1939 (R. H. Beamer) [KU]. ILLINOIS: 2 ♂♂, Marshall, 27 Sept. 1934 (Frison & Ross) [INHS]; 2 ♂♂, Anvil Rock, 3 Oct. 1934 (Frison & Ross) [INHS]; 1 ♂, Cave-in-Rock, 2 Oct. 1934 (Frison & Ross) [INHS]; 1 ♂, White Heath, 10 Sept. 1889 (C. A. Hart) [INHS]; 1 ♂, Urbana, 7 Aug. 1891 [INHS]. KANSAS: 1 ♂, Onaga (Crevecoeur) [KSU].

Variation in males. — The 55 males examined vary in size from 2.5 to 4.1 mm., fore wing from 2.1 to 3.3 mm. Variation in color and in standard measurements (Table V) is unusually small for a wide-ranging species.

Female (assigned here tentatively). — Pittsboro, N. C., 7 Oct. 1948, Berlese funnel, leaf mould (D. L. Wray) [USNM].

Description of female. — Length 3.1 mm., LH .60 mm., LT 1.1 mm. Head rufo-castaneous, thorax castaneous, abdomen light yellowish-brown; mandibles, clypeus, and antennae light castaneous, legs wholly light yellowish-brown. Mandibles as shown in Figure 37; clypeus broadly truncate apically and with median carina strong. Head 1.35 X as long as wide, sides subparallel but actually very weakly converging almost to posterior margin, where they are arcuately convergent to a broad, straight vertex. Eyes small, not contrasting to head, barely distinguishable. Front wholly alutaceous, though less strongly so above than antero-laterally; punctures rather elongate, separated from one another by about or less than their own maximum diameters; under side of head strongly alutaceous, weakly punctate. Pronotal disc 1.3 X as long as its posterior width, mesonotum 1.4 X as long as broad, propodeum 1.4 X as long as broad. Pronotum sparsely punctate, weakly alutaceous, though barely so in median area; mesonotum wholly weakly alutaceous, weakly punctate on sides; propodeal disc wholly alutaceous, though very weakly so antero-medially, sides weakly punctate. Mesopleurum laterally strongly alutaceous, weakly punctate. Body hairs pale, mostly rather short, abundant over most of body and legs.

Other females. — NORTH CAROLINA: 1, Fayetteville, 8 May 1949 (leaf mould, D. L. Wray) [USNM]. KENTUCKY: 1, Bowen, 8 May 1947 [INHS]. NORTH DAKOTA: 1, Minot, 21 May 1954 (wheat stubble, C. Benton) [USNM].

Variation in females. — The females from Kentucky and North Dakota are nearly identical in size to the specimen described above; the Fayetteville, N. C., specimen is slightly larger (head length .63 mm., thorax length 1.2 mm.). The latter specimen has the head only 1.3 X as long as wide, while in the Kentucky and North Dakota specimens it is fully 1.4 X as long as wide. The Kentucky specimen has the head rather distinctly striato-punctate antero-laterally and the eyes are more distinct than in the other specimens.

Remarks. — The females associated here tentatively are very similar to those of *rufiventre*. They are more heavily alutaceous than typical *rufiventre* females and also have a more elongate head; both these features also separate the males of these two species and suggest this association of the females.

TABLE VI

Species and locality	No.	LFW	WF/HE	OOL/WOT	DAO/WF	Ant. 11 L/W
<u>ashmeadi</u>						
Marmora, Ont.	1	2.7	1.42	1.00	.16	1.4
Massachusetts	4	2.2 (1.9-2.6)	1.63 (1.56-1.69)	1.32 (1.23-1.38)	.15 (.14-.16)	1.3 (1.2-1.4)
E. Hartford, Conn.	3	2.8 (2.6-3.0)	1.61 (1.49-1.63)	1.24 (1.16-1.30)	.13 (.12-.15)	1.3 (1.1-1.4)
Long Island, N. Y.	5	2.5 (2.2-2.9)	1.77 (1.71-1.94)	1.43 (1.33-1.72)	.12 (.10-.14)	1.2 (1.1-1.3)
Upstate New York	14	2.7 (2.3-3.3)	1.54 (1.40-1.64)	1.20 (1.00-1.40)	.14 (.13-.16)	1.3 (1.2-1.4)
Cassville, N. J.	1	2.6	1.74	1.41	.12	1.3
Takoma Park, Md.	20	2.5 (2.0-3.0)	1.60 (1.46-1.86)	1.24 (1.17-1.31)	.13 (.12-.14)	1.2 (1.0-1.3)
Washington, D. C. and vic.	27	2.5 (2.0-2.9)	1.67 (1.47-1.80)	1.25 (1.06-1.42)	.13 (.12-.15)	1.2 (1.0-1.4)
Hardy Co., W. Va.	1	2.2	1.61	1.37	.13	1.2
North Carolina	8	2.9 (2.1-3.5)	1.57 (1.47-1.68)	1.28 (1.10-1.50)	.14 (.12-.16)	1.3 (1.0-1.4)
South Carolina	22	2.5 (1.9-3.1)	1.58 (1.43-1.80)	1.30 (1.13-1.53)	.13 (.10-.14)	1.2 (1.0-1.4)
Georgia	8	2.5 (2.2-2.9)	1.60 (1.44-1.70)	1.30 (1.00-1.50)	.13 (.11-.15)	1.2 (1.1-1.3)
Ft. George, Fla.	1	2.6	1.55	1.50	.14	1.1
Waldo, Fla.	2	2.5 (2.2-2.8)	1.42 (1.36-1.48)	1.02 (1.00-1.04)	.15	1.0
Coleta, Ala.	4	2.5 (2.2-2.8)	1.45 (1.43-1.47)	1.23 (1.15-1.28)	.15	1.3 (1.1-1.4)
Fulton, Miss.	3	2.7 (2.3-3.0)	1.65 (1.58-1.77)	1.36 (1.22-1.64)	.12 (.11-.13)	1.2 (1.0-1.4)
Urania, La.	1	2.7	1.40	1.14	.15	1.3
Hamilton Co., Tenn.	2	2.2 (1.9-2.5)	1.49 (1.45-1.53)	1.12 (1.11-1.13)	.14	1.1 (1.0-1.2)
Gatlinburg, Tenn.	1	2.4	1.66	1.40	.13	1.1
Barberton, Ohio	2	2.8 (2.4-3.2)	1.61 (1.57-1.65)	1.18 (1.10-1.25)	.14	1.3
Michigan	2	2.6	1.56 (1.53-1.59)	1.22 (1.17-1.27)	.15	1.3
Illinois	9	2.5 (2.0-3.0)	1.55 (1.45-1.70)	1.15 (1.00-1.30)	.14 (.13-.16)	1.2 (1.0-1.4)
Joplin, Mo.	1	3.1	1.46	1.00	.16	1.3
Palmyra, Mo.	2	2.4 (2.3-2.5)	1.49 (1.44-1.53)	1.35 (1.30-1.40)	.14	1.3 (1.2-1.4)
Manhattan, Kansas	1	2.0	1.41	1.14	.14	1.1
<u>persimile</u>						
Lower Lake, Cal.	6	2.9 (2.6-3.1)	1.58 (1.42-1.76)	1.00 (.90-1.13)	.16 (.13-.17)	1.5 (1.4-1.6)
Upper Lake, Cal.	3	3.2 (3.1-3.3)	1.57 (1.54-1.60)	1.10 (1.07-1.12)	.15 (.14-.16)	1.6
Soda Bay, Lake Co., Cal.	1	2.8	1.60	1.13	.15	1.5
Colusa Co., Cal.	1	2.5	1.57	.86	.16	1.4
Davis, Cal.	1	2.7	1.55	.91	.18	1.6
Sacramento, Cal.	1	3.5	1.70	.88	.15	1.4

26. PSEUDISOBRACHIUM ASHMEADI new species

Isobranchium myrmecophilum Ashmead, 1893, Bull. U. S. Nat. Mus., 45:

37. [δ allotype, Washington, D. C. (USNM); ♀ holotype = *P. prolongatum* Prov.].

Isobranchium mandibulare Ashmead, 1893, *ibid.*, p. 38. [δ allotype, Ft. George, Fla. (USNM); ♀ holotype = *P. prolongatum* Prov.].

Holotype. — δ , Washington, D. C., 6 Sept. 1952 (Richard Boettcher) [USNM no. 65154].

Description. — Length 4.2 mm.; LFW 2.8 mm. Head piceous; thorax dark reddish-brown; abdomen castaneous, somewhat paler basally and apically; mandibles yellowish, teeth rufous; scape yellowish-brown, flagellum similar but with a tinge of rufous; legs wholly yellowish-brown; veins and stigma brown. Mandibles with four teeth, third tooth small, basal tooth broad, confluent with inner margin of mandible (Fig. 23). Clypeus with its truncate apical margin about as long as third antennal segment; median clypeal carina straight in profile. Antennae with first four segments in a ratio of about 22.5:8:8, segment three and segment eleven each about 1.3 X as long as thick; flagellar pubescence pale, coarse, erect setae numerous, some of them half as long as width of flagellum. WF .69 X WH, 1.58 X HE; ocelli

small, forming a triangle the front angle of which is less than a right angle; OOL 1.32 X WOT. Distance from tops of eyes to vertex crest subequal to eye height (Fig. 1). Front weakly shining, alutaceous though scarcely beaded as in *carbonarium*; punctures shallow though clearly evident, separated from one another by about their own diameters. Pronotum moderately shining, alutaceous, punctate. Mesoscutum also moderately shining, punctures small; notauli distinct on anterior .4; scutellar disc strongly shining. Propodeum 1.4 X as long as wide, disc shining, with reticulate sculpturing in front which is nearly absent behind; median carina well developed; spiracles small, nearly circular, directed dorsad. Mesopleurum with callus moderately convex, shining but distinctly alutaceous; remainder of mesopleurum only weakly shining, with large, shallow punctures. Discoidal vein weakly pigmented for a distance about equal to basal vein (Fig. 58). Genitalia as shown in Figure 63.

Paratypes. — ONTARIO: 1 ♂, Marmora, 16 Aug. (J. McAlpine) [CNC]. MASSACHUSETTS: 2 ♂♂, Holliston, Aug. (N. Banks) [MCZ]; 1 ♂, Forest Hills, 12 Oct. 1910 [MCZ]; 1 ♂, S. Natick, 2 Sept. 1940 (J. C. Bradley) [CU]. CONNECTICUT: 3 ♂♂, East Hartford, 3-5 Sept. 1947 (sweeping, H. E. Evans) [CU, MCZ]. NEW YORK: 1 ♂, Poughkeepsie, 25 Aug. 1936 (H. K. Townes) [HKT]; 1 ♂, Rens'ville, (K. W. Cooper) [USNM]; 2 ♂♂, Hancock, 10 Aug. 1935 (H. K. Townes) [HKT]; 1 ♂, Freeville, Tompkins Co., 1 Sept. 1922 [CU]; 1 ♂, McLean Bogs, Tompkins Co., 30 Aug. 1953 (sweeping grass, H. E. Evans) [CU]; 5 ♂♂, Ithaca, Aug.-Sept. (at light, sweeping) [CU, MCZ]; 1 ♂, Minetto, 21 Aug. 1938 (W. T. M. Forbes) [CU]; 1 ♂, Buffalo, 14 Oct. (M. C. Van Duzee) [CAS]; 1 ♂, DeBruce, 23-26 Aug. 1912 [AMNH]; 1 ♂, Farmingdale, 29 Aug. 1938 (H. K. Townes) [HKT]; 1 ♂, Bethpage, Aug. 1938 (F. S. Blanton) [CU]; 2 ♂♂, Babylon, Aug., Oct. (F. S. Blanton) [CU, USNM]; 1 ♂, Selden, L. I., 1 Oct. 1934 (sweeping flowers, F. S. Blanton) [USNM]. NEW JERSEY: 1 ♂, Cassville, 18 Aug. 1910 [AMNH]. MARYLAND: 20 ♂♂, Takoma Park, July-Sept., 1942-43 (H. & M. Townes) [HKT, MCZ]; 13 ♂♂, Plummer's Island, 31 Aug.-5 Oct., one on *Solidago* (K. V. Krombein, H. E. Evans) [MCZ, USNM, KVK]. DISTRICT OF COLUMBIA: 2 ♂♂, Washington, 6-8 Sept. 1952 (R. Boettcher) [USNM]. VIRGINIA: 6 ♂♂, Vienna, Aug. 1932 (J. C. Bridwell) [USNM]; 1 ♂, Clifton, Aug. 1932 (J. C. Bridwell) [USNM]; 1 ♂, Dunn

Loring, 28 Aug. 1949 (K. V. Krombein) [HKT]; 3 ♂♂, Falls Church, Aug.-Oct. (N. Banks) [MCZ]; 1 ♂, [no specific locality] under stone, 22 Aug. 1895 [USNM]. WEST VIRGINIA: 1 ♂, Lost River State Park, Hardy Co., 29 July-11 Aug. 1957 (KVK) [KVK]. NORTH CAROLINA: 1 ♂, Pink Beds, 23 July 1952 (G. & L. Townes) [HKT]; 1 ♂, Mooresville, 12 Sept. 1949 (H., M. & G. Townes) [HKT]; 1 ♂, Smoky Mts., Bryson City, 2000 feet, 25 Aug. 1930 (F. Carpenter) [MCZ]; 1 ♂, Flat Rock, 6 Sept. 1952 (G. & L. Townes) [HKT]; 1 ♂, Kill Devil Hills, Dare Co., 3 Aug. 1956 (K. V. Krombein) [KVK]; 2 ♂♂, Walnut, 20 Aug. 1930 (P. W. Oman) [KU]; 1 ♂, Hamrick, 29 Aug. 1950 (H., M. & D. Townes) [HKT]. SOUTH CAROLINA: 12 ♂♂, Greenville, July-Sept. (L. & G. Townes) [HKT]; 6 ♂♂, Table Rock, 17 Aug. 1952 (G. & L. Townes) [HKT]; 1 ♂, Columbia, 11 Sept. 1951 (L. & G. Townes) [HKT]; 3 ♂♂, Cleveland, 2 Aug. 1952 (G. & L. Townes) [HKT]. GEORGIA: 1 ♂, Pinnacle Pk., Rabun Co., 20 Aug. 1913 [CU]; 1 ♂, Spring Creek, Decatur Co., 16-29 July 1912 [MCZ]; 2 ♂♂, Tifton [USNM]; 1 ♂, Prattsburg, 25 July 1930 (L. D. Tuthill) [KU]; 1 ♂, Perty, 12 Aug. 1939 (R. H. Beamer) [KU]; 2 ♂♂, Austell, 17 July 1910 [MCZ]. FLORIDA: 2 ♂♂, Waldo, 18 Aug. 1930 (R. H. Beamer) [KU]. ALABAMA: 4 ♂♂, Coleta (H. H. Smith) [USNM]. MISSISSIPPI: 3 ♂♂, Fulton, 14 July 1930 [KU]. LOUISIANA: 1 ♂, Urania, 14 July 1943 [INHS]. TENNESSEE: 2 ♂♂, Hamilton Co., 20 Sept. 1939 (Turner) [USNM]; 1 ♂, Gatlinburg, 31 Aug.-4 Sept. 1940 (B. D. Burks) [INHS]. OHIO: 2 ♂♂, Barberton, 23 Aug. 1936 (L. J. Lipovsky) [KU]. MICHIGAN: 1 ♂, Bay Co., 22 July 1939 (R. R. Dreisbach) [RRD]; 1 ♂, Midland Co., 10 July 1952 (RRD) [RRD]. ILLINOIS: 1 ♂, Fox L., 13 Aug. 1937 (Ross & Burks) [INHS]; 1 ♂, Evergreen Park, 23 Aug. 1934 (DeLong & Ross) [INHS]; 2 ♂♂, Oak Lawn, July, Aug. [INHS]; 1 ♂, Marshall, 27 Sept. 1934 (Frison & Ross) [INHS]; 1 ♂, Seymour, 5 Aug. 1939 (Ross & Riegel) [INHS]; 1 ♂, Mahomet, 3 Aug. 1937 (Ross & Burks) [INHS]; 1 ♂, Principia College, Jersey Co., 2 July 1943 (C. L. Remington) [USNM]; 1 ♂, Alto Pass, 13 Aug. 1891 (C. A. Hart) [INHS]. MISSOURI: 1 ♂, 5 mi. N. Joplin, 5 Aug. 1950 (at light, H. E. Evans) [MCZ]; 2 ♂♂, Palmyra, 16 Sept. 1939 (G. T. Riegel) [INHS]. KANSAS: 1 ♂, Manhattan, 27 Sept. 1930 (D. A. Wilbur) [KSU].

Variation in males.—The 148 males examined vary in size from 2.2 to 4.2 mm., with the vast majority between 3 and 4 mm.;

LFW varies from 1.9 to 3.5. In some specimens the head and thorax are paler than in the type, and in a few the thorax and abdomen are piceous like the head; in no case is the abdomen contrastingly colored as compared to the thorax. The legs are yellow-brown in most specimens, but occasional specimens from various parts of the range have the legs brownish (though never dark brown). There is considerable variation in head shape; while in most specimens the head is slightly higher than wide and the distance from the eye tops to the vertex crest subequal to the eye height, in numerous specimens from various parts of the range the head is as wide as or wider than high and the distance from the eye tops to the vertex crest notably less than the eye height. As suggested in Table VI, most of the variation in this species shows little apparent correlation with geography. However, there is a tendency for specimens from the southern parts of the range to have shorter antennae. As in other species, local populations are sometimes rather distinctive in certain morphological characters. For example, five specimens from Long Island, N. Y., and one from New Jersey, all have the front unusually broad and the eyes proportionally very small.

Female (assigned here tentatively). — MASSACHUSETTS: Arlington, 24 May 1953, *Formica fusca* nest in woods (W. L. Brown) [MCZ].

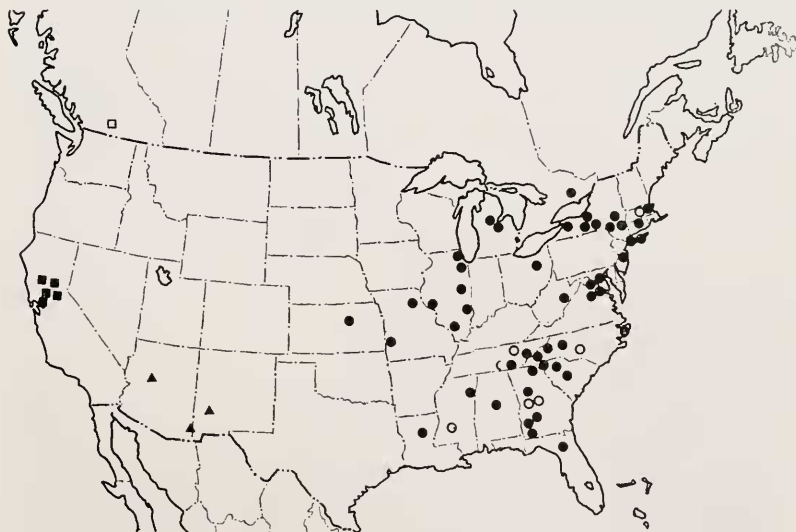
Description of female. — Length 2.9 mm., LH .50 mm., LT .95 mm. Head castaneous, thorax light castaneous, abdomen bright yellowish-brown; mandibles, clypeus, and antennae light castaneous; legs straw-colored. Mandibles with a weakly indicated fourth tooth (Fig. 38). Clypeus weakly emarginate apically, median carina strong. Head 1.33 X as long as wide, sides subparallel, posteriorly arcuately convergent to a vertex which is weakly emarginate medially. Eyes no larger than a head puncture, not contrasting in color to head and barely distinguishable. Front strongly shining, non-alutaceous, punctures very strong, separated by from 1-2 X their own diameters, except absent along median strip; under side of head shining, weakly alutaceous, weakly punctate. Pronotal disc 1.4 X as long as its posterior width; mesonotum about 1.5 X as long as wide; propodeum also about 1.5 X as long as wide. Pronotum strongly shining, non-alutaceous, with fairly strong, widely separated punctures except along median strip, which is bare. Mesonotum strongly shining and non-alutaceous except around edges. Propodeal disc very strongly shining, weakly alutaceous behind and with a few punctures on extreme sides. Mesopleurum weakly

alutaceous, weakly punctate. Hairs of body and legs numerous, pale, of moderate length.

Other females. — MASSACHUSETTS: 2, Forest Hills, one of them 4 May 1918 (W. M. Mann) [USNM]. NORTH CAROLINA: 1, Richmond Co., 28 Feb. 1938 (peach orchard, W. F. Turner) [USNM]. GEORGIA: 1, Upson Co., 7 March, 1938 (peach orchard, W. F. Turner) [USNM]; 3, Peach Co., May, Aug., Dec. (soil of peach orchard, W. F. Turner) [USNM]; 1, Fort Valley, 1936 (Christenson) [USNM]. TENNESSEE: 1, Hamilton Co., 16 Apr. 1940 (peach orchard, W. F. Turner) [USNM]; 1, Roane Co., 22 Nov. 1937 (in soil, W. F. Turner) [USNM]. MISSISSIPPI: 1, Lincoln Co., 14 July 1936 (W. F. Turner) [USNM].

Variation in females. — In the 12 females assigned here, head length varies from .47 to .53 mm. (mean .50); LH/WH varies from 1.26 to 1.33 (mean 1.30); thorax length varies from .90 to 1.0 mm. (mean about .95). Some of the Georgia specimens have the body hairs unusually dense and elongate. In the specimens from Forest Hills, Mass., the under side of the head is quite strongly alutaceous, but in most specimens it is only weakly so.

Remarks. — This is apparently one of the commoner species



Map 4. — Distribution of *P. ashmeadi*, males indicated by solid circles, supposed females by hollow circles. Distribution of *P. minimum*, males indicated by solid triangles (females unknown). Distribution of *P. per-simile*, males indicated by solid squares, possible female by a hollow square.

of the genus. Males have often been misidentified as *myrmecophilum*, but the type of that species is a female which I feel confident goes with Provancher's *prolongatum*. The females which I believe go with *ashmeadi* show relatively little variation in size, color, and body features, although the males exhibit considerable variation. It may well be true that the males assigned here represent more than one species and that the females go with only one of those species. (See Map 4.)

27. PSEUDISOBRACHIUM MINIMUM new species

Holotype. — δ , City of Rocks State Park, Grant Co., N. Mex., 17 July 1959 (K. V. Krombein) [USNM, no. 65160].

Description. — Length 3.0 mm.; LFW 2.3 mm. Head black; thorax dark brownish-fuscous; abdomen dark, shining brown, a little paler on sides of basal segments; apical two-thirds of mandibles light brown, teeth rufous; scape brownish-fuscous, flagellum bright castaneous; front coxae fuscous, remaining coxae and all femora medium brown, rest of legs light brown; wings hyaline, veins and stigma light brown. Mandibles with four teeth, basal tooth prominent, somewhat thicker than third tooth (Fig. 24). Clypeus with median carina arched, apex narrowly truncate. Antennae with first four segments in a ratio of about 30:9:10:10, segment three 1.2 X as long as thick, segment eleven about as long as thick; flagellar pubescence pale and moderately coarse, erect setae numerous but rather short. WF .71 X WH, 1.47 X HE; ocelli small, in a small triangle the front angle of which is less than a right angle; OOL 1.20 X WOT. Distance from tops of eyes to vertex crest subequal to eye height. Front shining, rather weakly alutaceous, punctures small but numerous and well-defined, separated from one another by about or slightly more than their own diameters. Pronotum and mesoscutum moderately shining, alutaceous, obscurely punctate; notauli present only on anterior .1 of mesoscutum; scutellar disc weakly alutaceous, shining. Propodeum 1.4 X as long as broad, disc with weak sculpturing over the entire surface, median carina long but rather weak; spiracles small, subcircular, directed dorso-laterad. Mesopleurum with callus elongate, weakly alutaceous, shining; anterior portion of mesopleurum with large but rather weak punctures. Discoidal vein of fore wing very weakly indicated by a faintly pigmented line.

Paratypes. — ARIZONA: 1 δ , Southwestern Research Station, 5 mi. W. Portal, Cochise Co., 5400 feet, 23 Aug. 1959

(H. E. Evans) [CU]; 1 ♂, Cottonwood, Yavapai Co., 28 July 1956, swept from alfalfa (Butler & Gerhardt) [UA].

Variation.—The specimen from Cochise County, Arizona, is larger and considerably darker than the type, having the legs and antennae very dark brown. Although closer to the type in size and color, the Cottonwood specimen has the head and thorax more heavily alutaceous and therefore somewhat less shining and less distinctly punctate; in this specimen, also, the clypeal carina is more strongly arched.

Remarks.—The distribution of this species is shown on Map 4.

28. PSEUDISOBRACHIUM MINUTISSIMUM new species

Holotype.—♂, Punta Lobos, 1 mi. SE of Todos Santos, Baja California, 25 Dec. 1958 (H. B. Leech) [CAS].

Description.—Length 2.1 mm.; LFW 1.6 mm. Head black; thorax dark brownish-fuscous; abdomen dark brown, somewhat paler basally and apically; apical three-fourths of mandibles straw-colored, teeth rufous; scape brown, flagellum light brown, very slightly darker apically; coxae and femora medium brown, remainder of legs brown; wings slender, hyaline, veins and stigma brown. Mandibles with four teeth, basal tooth slightly larger than third tooth (Fig. 26). Clypeus narrowly truncate apically, with a median ridge which disappears somewhat before apical margin. Antennae with first four segments in a ratio of about 3:1:1:1, segments three and eleven each barely longer than thick; flagellar pubescence coarse, pale, erect setae numerous, mostly less than half as long as thickness of flagellum. WF .69 X WH, 1.65 X HE; ocelli small, in a small triangle the front angle of which is less than a right angle; OOL 1.44 X WOT. Eyes rather protuberant laterally, vertex rather narrowly rounded off a distance above eye tops slightly greater than eye height (Fig. 4). Front shining, moderately alutaceous, punctures small, shallow, separated by about twice their own diameters. Vertex and thoracic dorsum more strongly alutaceous and less shining than front; mesoscutum obscurely punctate, notauli weakly developed on anterior .3; disc of scutellum shining. Propodeum 1.4 X as long as broad, disc shining, with reticulate sculpturing which is strongest basally; spiracles small, subcircular, directed dorso-laterad. Mesopleurum weakly alutaceous, obscurely punctate, callus only slightly convex and slightly more shining than remainder of mesopleurum. Discoidal vein of fore wing evident as a very weakly pigmented streak.

Paratypes. — ARIZONA: 2 ♂♂, Tucson, June, October (Butler, Crandall) [UA]. NEW MEXICO: 1 ♂, Las Cruces [USNM]. MORELOS: 1 ♂, 12 mi. E. of Cuernavaca, 14 Aug. 1954 (U. Kansas Exp.) [KU]. GUATEMALA: 1 ♂, Yepocapa, 1948-49 (H. T. Dalmat) [USNM].

Variation. — The six available specimens exhibit considerable variation in head measurements, as shown in Table V. The Guatemala specimen has the entire body medium brown, the wing veins very light brown; in the two Tucson specimens the wing veins are also light brown and in all three of these specimens the discoidal vein is very faint. The specimen from Las Cruces, New Mexico, not only has the lateral ocelli relatively rather close to the eyes (OOL 1.17 X WOT), but the entire body is pale castaneous, the setulae on the wing pale, and the veins and stigma nearly colorless. Also, in this specimen the clypeal carina is high and arched basally, rather abruptly declivous just before the apical margin. Some of the color variation in this series may, of course, be due to the fact that some specimens are teneral; in any case it is no greater than that found in several other species.

29. PSEUDISOBRACHIUM FLAVICORNIS (Kieffer) new combination

Holepyris flavicornis Kieffer, 1906, Berlin. Ent. Zeitschr., 50: 246 [Type: ♂, Granada, Nicaragua (Coll. Baker) (Pomona College, Claremont, Calif.)].

Lyssepyris flavicornis Kieffer, 1913, Boll. Lab. Zool. Portici, 7: 108 [Made type of new genus *Lyssepyris*]. — Kieffer, 1914, Das Tierreich, 41: 396-397.

Description of holotype. — Length 3.7 mm.; LFW 2.7 mm. Head piceous, thorax dark brown, abdomen medium brown with indistinct banding with lighter brown; mandibles light yellowish-brown, teeth rufous; antennae yellowish-brown, very slightly darker apically; legs wholly bright straw-yellow; wings hyaline, stigma brown, veins light brown. Mandibles with only three teeth, second tooth small, basal tooth broad, arching into inner mandibular margin (Fig. 28). Clypeus narrowly truncate apically, median carina straight in profile. First four antennal segments in a ratio of about 9:2:3:3, segment three slightly longer than thick, segment eleven about as long as thick; pubescence pale, moderately coarse, about as in *ashmeadi*. WF .70 X WH, 1.50 X HE; ocelli small, DAO .14 X WF; OOL 1.22 X WOT; ocelli well separated, front angle of ocellar triangle slightly less than a right angle. Distance from tops of eyes to vertex crest

equal to slightly less than HE. Front moderately shining, alutaceous, punctures shallow and inconspicuous, separated from one another by slightly more than their own diameters. Pro- and mesonota alutaceous, inconspicuously punctate; notauli moderately strong on anterior .3 of mesoscutum, absent behind. Propodeum short, about 1.4 X as long as broad; disc alutaceous, with strong median and lateral carinae; spiracles small, subcircular, directed dorsad. Mesopleural callus large, slightly depressed midway of its length, shining and non-alutaceous; posterior margin of mesopleurum below callus also shining, remainder of this sclerite weakly alutaceous and with rather strong punctures. Discoidal vein of fore wing weakly pigmented.

Other males examined. — HONDURAS: 2 ♂♂, La Ceiba, 14 Aug. and 2 Dec. 1916 (F. J. Dyer) [USNM, AMNH].

Variation. — One of the two Honduras specimens [AMNH] is strikingly similar to the type in every respect, including size. The other specimen is considerably smaller (LFW 1.9) and has four-toothed mandibles, about as in *ashmeadi*; this specimen is also generally more weakly punctate than the other two.

30. PSEUDISOBRACHIUM NAVAJO new species

Holotype. — ♂, Tuba City, Coconino Co., Arizona, 27 July 1954 (at light, H. E. and M. A. Evans) [MCZ, No. 30282].

Description. — Length 4.0 mm.; LFW 2.8 mm. Head black, thorax piceous, abdomen dark brown, paler basally and apically; mandibles light brown, teeth rufous; antennae light brown, tinged with rufous beyond third segment; front coxae dark brown, legs otherwise light yellowish-brown; wings hyaline, with pale setulae, stigma light brown, veins nearly colorless. Mandibles with four teeth, basal tooth slightly exceeding third tooth (Fig. 25). Clypeus narrowly truncate apically, median carina high and arched basally, but abruptly declivous well before margin. First four antennal segments in a ratio of about 20:6:7:7, segment three 1.4 X as long as thick, segment nine 1.2 X as long as thick (one antenna broken off at segment five, the other at segment ten); flagellar pubescence coarse, pale, suberect, erect setae numerous, many of them half as long as width of flagellum. WF .71 X WH, 1.48 X HE; DAO .14 X WF; ocelli in a moderately broad triangle, the front angle about a right angle, OOL .94 X WOT. Vertex broadly rounded, in the middle nearly straight across; distance from eye tops to vertex crest equal to .8 X HE. Front strongly alutaceous, somewhat

shining, with numerous shallow but well-defined punctures, these separated by about or slightly more than their own diameters. Pronotum alutaceous, somewhat shining, obscurely punctate. Mesoscutum alutaceous and uniformly covered with small but distinct punctures; notauli rather weakly developed on anterior .3; scutellar disc shining, weakly alutaceous, weakly punctate. Propodeum 1.3 X as long as broad, disc with weak reticulate sculpturing and well-developed median and lateral carinae; spiracles elliptical, directed dorso-laterad. Mesopleural callus convex and shining, remainder of mesopleurum less strongly shining, alutaceous, obscurely punctate. Discoidal vein of fore wing absent.

Paratype. — 1 ♂, Chino Valley, Yavapai Co., Ariz., 27 July 1956 (swept from alfalfa, Butler and Gerhardt) [UA].

Variation. — In the paratype the basal mandibular tooth is slightly broader and shorter than the third tooth and the clypeal carina less abruptly declivous than in the type. In this specimen the notauli are absent and the mesopleurum more distinctly punctate anteriorly.

31. PSEUDISOBRACHIUM PERSIMILE new species

Holotype. — ♂, Lower Lake, Lake Co., Calif., 8 Aug. 1958 (light trap, R. E. Dolphin) [CAS].

Description. — Length 3.3 mm., LFW 3.1 mm. Head and thorax black, abdomen dark brown, paler on sides of basal segments; apical half of mandibles light brown; scape black, flagellum dark brown; legs dark brown except tibiae medium brown, tarsi light brown; wings hyaline, setulae brown, stigma brown, veins light brown. Mandibles with third tooth small, fourth tooth only slightly broader than third tooth. Clypeus truncate apically, median carina not arched in profile. Antennae rather long, first four segments in a ratio of about 20:5:8:8, segment three about twice as long as thick, segment eleven 1.5 X as long as thick; flagellar pubescence short although suberect, erect setae rather prominent, some of them half as long as width of flagellum. WF .71 X WH, 1.67 X HE; ocelli well separated, front angle of ocellar triangle less than a right angle, DAO .17 X WF'; OOL subequal to WOT. Head gradually narrowed behind eyes, vertex narrow but nearly straight across; distance from eye tops to vertex crest subequal to HE (Fig. 2). Front shining, alutaceous although not strongly so, punctures weak and barely visible. Pronotum and mesoscutum also shining, moderately alutaceous, obscurely punctate; notauli impressed on anterior half of mesoscutum; disc of scutellum strongly shining. Propodeum elongate,

measuring 1.6 X as long as broad, disc strongly shining though with weak reticulate sculpturing, especially anteriorly; spiracles subcircular, directed dorso-laterad. Mesopleurum elongate, callus elongate and shining, remainder of mesopleurum somewhat alutaceous but without noticeable punctures. Fore wing with discoidal vein barely pigmented, arising a short distance down on transverse median vein. Abdomen slender.

Paratype. — CALIFORNIA: 5 ♂♂, same data as type but three of them 25 July 1958 [UCD, USNM, MCZ]; 3 ♂♂, Upper Lake, Lake Co., 25 July, 8 Aug. 1958 (light trap, R. E. Dolphin) [UCD, MCZ]; 1 ♂, Soda Bay, Lake Co., 25 July 1958 (light trap, R. E. Dolphin) [UCD]; 1 ♂, College City, Colusa Co., 16 July 1959 (light trap, J. Fowler) [UCD]; 1 ♂, Davis, Yolo Co., 24 June 1959 (light trap, F. E. Strong [UCD]; 1 ♂, Sacramento, 20 July 1933 (H. H. Kiefer) [CDAS]; 1 ♂, Vacaville, Solano Co., 31 July 1954 (light trap, E. Mezger) [UCD].

Variation. — The specimen from Vacaville, Davis, and Sacramento have the front and thoracic dorsum more heavily alutaceous and more distinctly punctate than in the series from Lake Co. Variation in standard measurements is not unusual (Table VI).

Female (assigned here tentatively). — Vernon, British Columbia, 9 May 1948 (E. S. Ross) [CAS].

Description of female. — Length 2.8 mm., LH .72 mm., LT 1.2 mm. Entire body pale yellowish-brown; legs and antennae straw-colored. Mandibles with three teeth, the basal tooth weak, about as in Figure 41. Clypeus broadly truncate apically. Head 1.23 X as long as wide, sides subparallel nearly to posterior margin, then arcuately convergent to a very broad, straight vertex. Eyes not discernible. Front wholly rather weakly alutaceous, not strongly shining; punctures absent from median strip, otherwise numerous, separated by about their own diameters, not especially strong and not notably elongated; under side of head strongly alutaceous, weakly punctate. Pronotal disc 1.4 X as long as its posterior width; mesonotum and propodeum each about 1.5 X as long as maximum width. Pronotal disc weakly alutaceous, with weak, widely separated punctures; mesonotum wholly alutaceous, not strongly shining, obscurely punctate on sides; propodeal disc weakly alutaceous, weakly punctate on sides. Mesopleurum strongly alutaceous, dull, obscurely punctate. Hair on body and legs short, pale, moderately abundant.

Remarks.—The males of this species have a general resemblance to those of the sympatric *occidentale*: they are elongate, dark in color, and have a similarly shaped head, although longer behind the eyes. However, the difference in the mandibular dentition readily places these two species in different species-groups. The single female is from a locality far outside the known range of the males (Map 4). The only males I have seen from British Columbia belong to *prolongatum*, the female of which is well known and considerably larger than the female described above. I am hesitant to describe this single female as new, and therefore assign it to *persimile* very tentatively on the assumption that the range of that species is much wider than present evidence indicates.

32. PSEUDISOBRACHIUM HURDI new species

Holotype. — ♂, 8 mi. S. of Canutillo, Durango, Mexico, 9 Aug. 1951 (P. D. Hurd) [CAS].

Description. — Length 4.3 mm.; LFW 2.9 mm. Head piceous, thorax and abdomen dark reddish-brown; apical half of mandibles yellowish, teeth rufous; scape dark brown, flagellum castaneous; legs medium brown except tarsi light brown; wings hyaline, veins and stigma light brown. Mandibles with third tooth small, fourth tooth broad and arching into inner mandibular margin. Clypeus broadly truncate apically, its truncate margin longer than third antennal segment; median carina high, weakly arched. Antennae with first four segments in a ratio of about 22:5:9:9, segment three 1.5 X as long as thick, segment eleven 1.2 X as long as thick; flagellar pubescence fine, pale, appressed, erect setae mostly less than one fourth as long as width of flagellum. WF .72 X WH, 1.85 X HE; ocelli small, DAO .12 X WF, in a broad triangle, front angle of about a right angle; OOL 1.22 X WOT. Vertex extended far above eye tops, distance from eye tops to vertex crest slightly greater than HE; top of vertex nearly straight across (Fig. 3). Front alutaceous, moderately shining, with distinct punctures which are separated from one another by from one to two times their own diameters. Pronotum and mesoscutum shining, somewhat alutaceous, with sparse but distinct punctures; notauli impressed on anterior .3 of mesoscutum; scutellar disc strongly shining. Propodeum 1.4 X as long as broad, disc shining but wholly alutaceous, median carina strong; spiracles elliptical, directed dorso-laterad. Mesopleurum shining, somewhat alutaceous, anteriorly with small

punctures; callus slightly convex but not otherwise differing from remainder of pleurum. Fore wing with discoidal vein interstitial with median vein, distinct for a distance about equal to basal vein but only very weakly pigmented.

Paratypes. — 5 ♂♂, same data as type (P. D. Hurd, H. E. Evans) [USNM, CIS, MCZ].

Variation. — The five paratypes resemble the holotype closely in size and coloration; there is some variation in the intensity of punctation on the head and thorax, and in two specimens the mesopleural callus is more strongly shining than in the type. The variation in measurements of body parts is not great (Table V).

Remarks. — The six known specimens of this distinctive form were taken at Coleman lanterns which were placed on the ground in semi-arid grassland at about 6000 feet elevation.

33. PSEUDISOBRACHIUM KROMBEINI new species

Holotype. — ♂, Albuquerque, N. Mex., 14-15 Aug. 1959 (at light, K. V. Krombein) [USNM, no. 65161].

Description. — Length 3.8 mm.; LFW 2.9 mm. Head black, thorax piceous, abdomen dark, shining brown; apical half of mandibles light brown; scape dark brown, flagellum dull brownish-ferruginous; front coxae dark brown, remaining coxae and all femora medium brown, rest of legs light brown; wings hyaline, setulae pale, veins and stigma light brown. Mandibles with third tooth very small, fourth tooth very broad, arching into inner mandibular margin (Fig. 27). Apical truncate margin of clypeus unusually broad, measuring nearly 1.5 X as long as length of third antennal segment (Fig. 50); median clypeal carina arched in profile. Antennae with first four segments in a ratio of about 20:5:8:8, segment three and segment eleven each about 1.3 X as long as thick; pubescence of flagellum pale, the setulae short but suberect, erect setae sparse and short. WF .68 X WH, 1.52 X HE; ocelli small, DAO .15 X WF; ocellar triangle broad, front angle a right angle; OOL 1.06 X WOT. Distance from tops of eyes to vertex crest equal to about .8 HE; vertex nearly straight across. Front alutaceous, somewhat shining, with small but distinct punctures which are separated from one another by 1-2 X their own diameters. Pronotum and mesoscutum strongly alutaceous but somewhat shining, punctures small and rather weak; notauli impressed on anterior .2 of mesoscutum; scutellar disc strongly shining. Propodeum 1.4 X as long as broad, disc alutaceous but shining, median carina giving rise to a few weak transverse carinae; spiracles small,

elliptical, directed dorsad. Mesopleurum with callus elongate, shining and rather weakly alutaceous; anterior ventral part of mesopleurum rugoso-punctate. Discoidal vein of fore wing represented only by a weak, unpigmented streak.

Paratype. — ♂, White Sands, N. Mex., 27 June 1940 (D. E. Hardy) [KU].

Variation. — The single paratype is slightly smaller and paler; the head is piceous, the thorax and abdomen medium brown, the legs and antennae light brown. The notauli are slightly longer, the mesopleural callus somewhat more alutaceous. Variation in head measurements is slight (Table V). The paratype has the front of the head somewhat damaged, making measurement of the anterior ocellus impossible; however, the ocelli seem to be about the same size as in the type.

RUFIVENTRE Species-group

To this group are assigned nine species, of which two are eastern and seven chiefly southwestern in distribution. There are no real differences between this group and the *carbonarium* group; arbitrarily I restrict this group to species with generally larger eyes and ocelli. However, this character is quite tenuous, as several species exhibit considerable variation in eye and ocellar size. Furthermore, *flaviventre* provides an almost perfect intermediate. The females, where known, do not differ in any notable fashion from those of the *carbonarium* group.

34. PSEUDISOBRACHIUM FLAVIVENTRE (Kieffer) new combination

Epyris flaviventris Kieffer, 1904, Ark. Zool., 1: 526. [Type: ♂, Texas (Belfrage) (Naturhist. Riksmus. Stockholm, no. 228)].

Xantopyris flaviventris Kieffer, 1913, Boll. Lab. Zool. Portici, 7: 108.

Xantopyris flaviventris Kieffer, 1914, Das Tierreich, 41: 417.

Description of holotype. — Length 4.0 mm.; LFW 2.9 mm. Head and thorax dark reddish-brown except prothorax somewhat lighter, abdomen bright, pale rufous; mandibles yellowish-brown, teeth rufous; scape straw-colored, flagellum light reddish-brown; legs, including all coxae, light straw-colored; wings hyaline, with pale setulae, stigma light brown, veins almost colorless. Mandibles with third tooth small, fourth tooth broad, rounded into inner mandibular margin. Clypeus truncate apically, median earina straight in profile. Antennae very short, first four segments in a ratio of about 21:5:7:6, segment three about 1.2 X as long as thick, segment eleven 1.1 X as long as thick; pubescence

TABLE VII

Species and locality	No.	LFW	WF/HE	OOL/WOT	DAO/WF	Ant. 11 L/W
flaviventre						
Dover, Del.	1	2.8	1.33	.84	.18	1.0
Chestertown, Md.	1	2.6	1.69	1.13	.13	1.0
Washington, D.C. and vic.	3	2.4 (2.3-2.6)	1.64 (1.53-1.72)	1.26 (1.18-1.32)	.14 (.13-.15)	1.0 (.9-1.1)
Raleigh, N. C.	2	2.8	1.34 (1.31-1.37)	.85 (.82-.88)	.18	1.1
Alken, S. C.	1	2.2	1.46	1.03	.16	1.0
Roberta, Ga.	2	2.3	1.41 (1.35-1.47)	1.00 (.97-1.30)	.17	1.2
Prattsburg, Ga.	1	2.7	1.28	1.20	.17	1.0
Okefenokee Sw., Ga.	1	2.3	1.58	1.06	.16	1.0
No. Central Fla.	8	2.5 (2.0-3.0)	1.49 (1.35-1.69)	1.02 (.86-1.19)	.17 (.14-.19)	1.0
Sebring, Fla.	1	2.1	1.26	.68	.19	0.9
Okeechobee, Fla.	1	2.1	1.46	1.12	.17	1.0
Everglades Nat. Pk, Fla.	1	2.7	1.45	.95	.19	1.1
Cottondale, Ala.	2	2.0 (1.8-2.2)	1.34 (1.32-1.36)	1.06 (1.00-1.12)	.18 (.17-.19)	1.1
Tuscaloosa, Ala.	8	2.7 (2.1-3.0)	1.40 (1.33-1.50)	.88 (.83-.96)	.18 (.15-.21)	1.1 (1.0-1.2)
Eastern Texas	5	2.6 (2.4-2.9)	1.48 (1.43-1.50)	1.01 (.95-1.07)	.16 (.15-.17)	1.0
Scott Co., Kansas	1	2.6	1.58	1.03	.15	1.1
Illinois	4	2.4 (2.2-2.7)	1.45 (1.42-1.50)	1.08 (1.00-1.12)	.18 (.17-.20)	1.1
rufiventre						
Massachusetts	4	3.0 (2.5-3.4)	1.36 (1.28-1.48)	.95 (.72-1.10)	.19 (.17-.21)	1.3 (1.2-1.4)
Bethany, Conn.	1	3.3	1.20	.95	.22	1.3
Ithaca, N. Y.	1	3.1	1.36	1.00	.19	1.3
New Jersey	6	3.2 (2.8-3.5)	1.34 (1.29-1.37)	1.03 (.94-1.13)	.18 (.17-.19)	1.4 (1.3-1.5)
Delaware	3	3.1 (3.0-3.3)	1.33 (1.23-1.43)	1.01 (.94-1.10)	.19	1.4 (1.3-1.4)
Maryland	11	3.2 (2.6-3.7)	1.32 (1.25-1.35)	1.02 (.89-1.10)	.18 (.16-.21)	1.3 (1.2-1.4)
No. Virginia	12	3.1 (2.5-3.4)	1.31 (1.22-1.38)	.97 (.87-1.12)	.19 (.17-.21)	1.4 (1.2-1.5)
West Virginia	4	3.3 (2.9-3.6)	1.38 (1.33-1.43)	1.09 (1.03-1.21)	.17	1.3
Wake Co., N. C.	2	3.1 (2.8-3.3)	1.22 (1.20-1.24)	.85 (.81-.90)	.19	1.4
Dare Co., N. C.	10	2.4 (2.2-2.8)	1.30 (1.23-1.35)	1.04 (.96-1.12)	.17 (.16-.18)	1.2 (1.1-1.3)
Experiment, Ga.	2	3.2	1.20	.83 (.73=.93)	.20 (.18-.22)	1.4
Gainesville, Fla.	1	2.5	1.13	.70	.26	1.2
Orange Co., Fla.	1	3.0	1.31	1.04	.17	1.4
Daytona Beach, Fla.	1	2.1	1.28	.92	.17	1.3
Miami, Fla.	1	2.3	1.18	.78	.25	1.2
Clay Co., Ala.	1	2.9	1.04	.73	.22	1.5
Tuscaloosa, Ala.	1	2.8	1.40	.91	.17	1.2
Harahan, La.	1	2.5	1.27	.90	.20	1.3
comanche						
Santa Cruz Co., Ariz.	2	3.1 (2.8-3.4)	1.21 (1.17-1.25)	.88 (.82-.94)	.22	1.4
Pinal Co., Ariz.	3	2.7 (2.6-2.8)	1.14 (1.12-1.17)	.60 (.51-.67)	.24 (.23-.25)	1.7 (1.4-2.0)
Cochise Co., Ariz.	1	2.9	1.26	.95	.22	1.6
Ward Co., Texas	1	2.9	1.04	.52	.30	1.4
pusillum						
Shreveport, La.	6	2.0 (1.6-2.5)	1.24 (1.19-1.28)	.90 (.73-1.0)	.19 (.18-.21)	1.2 (1.2-1.3)

of flagellum pale, decidedly coarse and semi-erect, erect setae numerous, many of them nearly half as long as width of flagellum. Front rather broad, WF .71 X WH, 1.40 X HE; ocelli relatively small, DAO .17 X WF; ocelli in a rather broad triangle, front angle nearly a right angle; OOL .88 X WOT. Head very slightly wider than high; vertex very broadly rounded, distance from tops of eyes to vertex crest equal to about .65 X HE; anterior ocellus touching an imaginary line drawn between eye tops. Front alutaceous, somewhat shining, punctures shallow but rather well defined, separated from one another by about their own diameters. Pronotum alutaceous, moderately shining, punctures small but rather distinct. Mesoscutum shining, rather weakly alutaceous, distinctly punctate; notauli strong on anterior .4; scutellar disc strongly shining. Propodeum short, only about 1.2 X as long as broad, disc with reticulate sculpturing anteriorly, median carina strong; spiracles elliptical, directed dorsad.

Mesoscutum wholly somewhat shining, but the callus especially so; callus convex, well differentiated; anterior part of mesopleurum with numerous large punctures. Fore wing with discoidal vein evidenced by only a very faint, unpigmented line (Fig. 60).

Males examined. — DELAWARE: 1, Dover, 4 Aug. 1932 [USNM]. MARYLAND: 1, Chestertown, 30 July 1901 (E. G. Vanatta) [ANSP]. DISTRICT OF COLUMBIA: 1, Washington (C. N. Ainslie) [USNM]. VIRGINIA: 1, Vienna, June (J. C. Bridwell) [USNM]; 1, Arlington, 24 Aug. 1946 (R. H. Beamer) [KU]. NORTH CAROLINA: 2, Raleigh, 26 July 1948 (M. W. King) [USNM]. SOUTH CAROLINA: 1, Aiken, 23 June 1957 (W. R. M. Mason) [CNC]. GEORGIA: 1, Prattsburg, 25 July 1930 (P. W. Oman) [KU]; 2, Roberta, 6 Oct. 1945 (P. W. Fattig) [INHS]; 1, Okefenokee Swamp, 25 July 1939 (R. H. Beamer) [KU]. FLORIDA: 3 Welaka, May (H. E. Evans) [CU]; 1 Sebring, 31 Aug. 1942 (C. T. Parsons) [MCZ]; 1, Old Town, 11 July 1939 (R. H. Beamer) [KU]; 1, Sanford, 21 June 1933 (C. O. Bare) [KU]; 2, Winter Park, May, July (at light, H. T. Fernald) [FSPB]; 1, Okeechobee, 3 April 1953 (J. C. Martin) [CNC]; 1, Paradise Key, Everglades Nat. Pk., 5 April 1952 (G. S. Walley) [CNC]. ALABAMA: 2, Cottondale, 18 June 1957 (at light, W. L. Brown) [MCZ]; 8, Tuscaloosa, July, Aug. (at light, B. D. Valentine) [CU, MCZ]. TEXAS: 4, St. Austin St. Pk., nr. Sealy, 14-16 June 1956 (at light, H. E. Evans and E. G. Matthews) [CU, MCZ]; 1, Richmond, Fort Bend Co., 22 June 1917 [MCZ]; 1, (Belfrage) [type, Stockholm Mus.]. KANSAS: 1, Scott Co., 14 Aug. 1951 (at light, H. E. Evans) [KSU]. ILLINOIS: 2, Carterville, Williamson Co., Aug. 1958 (V. Cole) [UCD]; 1, Urbana, 4 Sept. 1945 (at light, H. H. Ross) [INHS]; 1, Golconda, 7 July 1944 (at light, Sanderson & Leighton) [INHS].

Variation. — The 43 specimens examined vary in length from 2.1 to 4.2 mm., fore wing from 1.8 to 3.0 mm. The abdomen is brown in specimens from Maryland, District of Columbia, and Arlington, Virginia, while the whole body is very light brown in the specimen from Vienna, Virginia; otherwise the rufous abdomen contrasts conspicuously with the head and thorax. The antennae show little variation in length and color, but there is much variation in the width of the front and in the length of the ocello-ocular line as compared to the width of the ocellar triangle (Table VII). Some of the latter variation is a result

of differences in the shape of the ocellar triangle, which, however, is seldom as compact as in *rufiventre* or as broad as in *rectangulum*.

Female (assigned here tentatively).—ALABAMA: Tuscaloosa Co., 6 April 1949, under stone on dry cut-over hillside (B. D. Valentine) [MCZ].

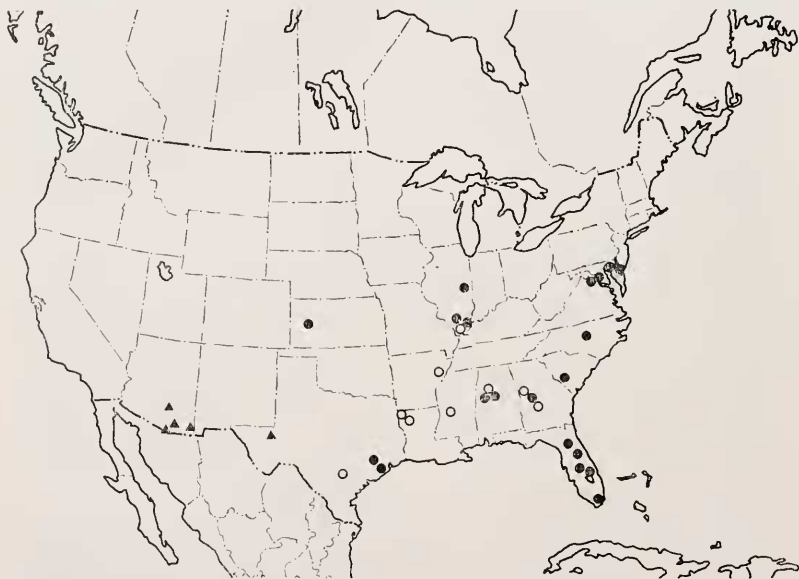
Description of female.—Length 3.2 mm., LH .58 mm., LT 1.1 mm. Entire body light castaneous; tips of mandibles rufous; antennae light castaneous, fading to dull yellowish-brown apically; legs straw-colored. Mandibles very slender, with three apical teeth, the basal tooth very small (Fig. 41). Clypeus broadly truncate, median carina strong, not reaching apical margin. Head 1.25 X as long as wide, sides very weakly, gradually convergent to near posterior margin, where they are more strongly, arcuately convergent to a broad, straight vertex. Eyes small, not larger than one of head punctures, barely distinguishable. Head strongly shining, weakly alutaceous except barely so medially and posteriorly, punctures large, posteriorly separated by about or slightly more than their own diameters, anteriorly somewhat more crowded (punctures absent from median strip); under side of head alutaceous, punctures rather weak, evenly spaced. Pronotal disc 1.35 X as long as its posterior width; mesonotum 1.4 X as long as wide; propodeum 1.4 X as long as wide. Pronotum strongly shining, with well separated, fairly strong punctures except along midline; mesonotum strongly shining, weakly alutaceous laterally; propodeum very strongly polished, with a few weak punctures on extreme sides of disc. Mesopleurum weakly alutaceous, weakly punctate. Hairs of body and legs short, pale, abundant.

Other females.—GEORGIA: 2, Peach Co., May, Sept. (in soil) [USNM]; 3, Upson Co., March, July, Aug. (W. F. Turner) [USNM]. MISSISSIPPI: 1, Ridgeland, Madison Co., 20 May 1959 (forest debris, Ross & Stannard) [INHS]. LOUISIANA: 7, Bossier Par., Feb., May, Sept., Oct. (soil of peach orchard, W. F. Turner) [USNM]; 1, Caddo Par., 13 Sept. 1937 (soil of peach orchard, W. F. Turner) [USNM]. TEXAS: 6, Bexar Co., July, Sept. (soil of peach orchard, W. F. Turner) [USNM]. ARKANSAS: 1, St. Francis Co., 13 June 1936 (in soil, W. F. Turner) [USNM]. ILLINOIS: 1, Little Grassy Lake, Williamson Co., 10 Aug. 1958 (oak-hickory woods, in leaf litter in or near nest of *Solenopsis* of group *molesta* Say, W. L. Brown) [MCZ].

Variation in females.—Head length varies from .47 to .60 mm. (mean .56 mm.); LH/WH varies from 1.22 to 1.35 (mean 1.28);

thorax length varies from 0.8 to 1.1 mm. (mean about 1.0 mm.). Smaller specimens tend also to be slightly more slender (pronotum 1.5 X as long as wide, mesonotum 1.6, propodeum about 1.5 X as long as wide). While most specimens agree closely in color with the one described above, in the Illinois specimen the head is medium castaneous, darker than the thorax and abdomen, while in the Mississippi specimen the whole body is rich medium castaneous. In some of the specimens from Bossier Parish, La., the head punctures are somewhat weaker and more widely spaced than described above.

Remarks.—Collecting records indicate that the males are nocturnal. The species seems especially characteristic of the Gulf



Map 5.—Distribution of *P. flaviventre*, males indicated by solid circles, supposed females by hollow circles. Distribution of *P. comanche*, males indicated by solid triangles (females unknown).

Coast states and ranges northward in smaller numbers to Illinois and to Delaware. This sex association is highly tentative and is based on coincidence of distribution of females (Map 5) as well as structure intermediate between *ashmeadi* and *rufiventre* (as is characteristic of the males).

Separation of both sexes from the largely sympatric species *ashmeadi* and *rufiventre* is difficult. The females are about the

same size as those of *ashmeadi* but have the head more alutaceous and closely punctate, somewhat less so than in the slightly larger species *rufiventre*. In the males, the abdomen is usually rufous in *flaviventre*, occasionally rufous in *rufiventre*, and never rufous in *ashmeadi*. The antennae are only occasionally as short in *rufiventre* and *ashmeadi* as in *flaviventre*, and the mesopleurum is not of quite the same configuration. In *ashmeadi* and *rufiventre* the wings tend to have darker veins and setulae and the discoidal vein is distinctly pigmented; however, occasional specimens are difficult to place on this character alone.

35. PSEUDISOBRACHIUM RUFIVENTRE (Ashmead)

Isobrachium rufiventre Ashmead, 1893, Bull. U. S. Nat. Mus., 45: 38-39.

[Type: ♀, Occoquan Falls, Va., 5 Aug. 1885, under stone (T. Pergande) (USNM no. 2186); allotype: ♂, on same pin].

Pseudisobrachium rufiventre Kieffer, 1908, Genera Insect., 76: 24. — Kieffer, 1914, Das Tierreich, 41: 480. — Fouts, 1928, Proc. Ent. Soc. Wash., 30: 122.

Pseudisobrachium flavicoxis Fouts, 1928, Proc. Ent. Soc. Wash., 30: 122. [Type: ♀, Baldwin, Kansas (USNM no. 62548)]. New synonymy.

Pseudisobrachium puncticeps Fouts, 1928, Proc. Ent. Soc. Wash., 30: 123-124. [Type: ♂, Glen Echo, Md., 19 Aug. 1916 (at light, R. Fouts) (USNM no. 62550)]. New synonymy.

Description of male allotype. — Length 3.3 mm., LFW 2.6 mm. Head and thorax dark reddish-brown, abdomen slightly paler and with indistinct banding with light brown, especially basally; mandibles light brown, teeth rufous; scape brown, flagellum dull reddish-brown; legs wholly light brown; wings hyaline, setulae brown, veins and stigma brown. Mandibles with third tooth small, basal tooth broad, as in other species of this complex. Apical margin of clypeus subtruncate. Antennae with first four segments in a ratio of about 18:5:8, segment three about 1.4 X as long as thick, segment eleven 1.3 X as long as thick; flagellar pubescence unusually coarse and suberect, erect setae numerous, more erect though not very much longer than the pubescence. Front rather narrow, WF .64 X WH, 1.23 X HE; ocelli of moderate size, DAO .21 X WF, in a compact triangle, posterior ocelli separated by hardly more than their own diameter; OOL and WOT subequal. Eyes weakly bulging, head gradually contracted behind eyes to a rather broadly rounded vertex; distance from eye tops to vertex crest about .8 X HE (Fig. 5). Front alutaceous, moderately shining, obscurely punctate. Pro- and mesonota also moderately shining though alutaceous, meso-scutum with shallow punctures which, on the sides, are separated

by little more than their own diameters; notauli strong on anterior half of mesoscutum. Propodeum about 1.5 X as long as broad, in lateral view twice as long as high; spiracles elliptical, directed dorso-laterad; disc somewhat shining, weakly alutaceous, with some reticulate sculpturing at extreme base. Mesopleurum shining, weakly alutaceous, callus convex though not well separated or differing notably from mesopleurum below and behind it; anterior part of mesopleurum only weakly punctate. Fore wing with discoidal vein arising slightly below junction of basal and transverse median veins, pigmented to a distance greater than length of basal vein.

Males examined. — MASSACHUSETTS: 1, Cambridge, Aug. 1932 (J. Bequaert) [MCZ]; 2, Holliston, 3-7 Sept. (N. Banks) [MCZ]; 1, Framingham (C. A. Frost) [MCZ]. NEW YORK: 1, Ithaca, 11 Aug. 1937 (at light, P. P. Babi) [CU]. CONNECTICUT: 1, Bethany, 16 Oct. 1960 (found dead in light shade, H. E. Evans) [MCZ]. NEW JERSEY: 2, Pemberton, 5 Aug. 1939 (H. K. Townes) [HKT]; 1, Butler, 1955 (R. Dorland) [CU]; 1, Ramsey, 29 July 1917 [AMNH]; 1, Lakehurst, 9 Aug. 1959 (D. Anderson) [CU]; 1, Moorestown, 11 Aug. 1939 (H. & M. Townes) [HKT]. DELAWARE: 1, Dover [USNM]; 2, Ship John L. H., Delaware Bay, 22 Aug. 1936 [USNM]. MARYLAND: 1, Snow Hill, 5 July 1933 (F. C. Bishop) [USNM]; 2, Plummer's Island, 23 Sept. 1960 (H. E. Evans) [MCZ]; 1, Annapolis, 1933 [USNM]; 6, College Park, July, Aug. 1933 (F. C. Bishop) [USNM]; 1, Glen Echo, 19 Aug. 1916 (R. Fouts) [USNM]. WEST VIRGINIA: 2, French Creek, Upshur Co., Sept. 1938 (G. E. Wallace) [CM]; 2, Shaver's Fork, Tucker Co., Oct. 1938 (GEW) [CM]. VIRGINIA: 6, Vienna, June-Aug. (J. C. Bridwell) [USNM]; 4, Arlington, Aug., Sept. [KVK, MCZ]; 1, Olney, 16 Aug. 1933 (F. C. Bishop) [USNM]; 1, Falls Church, 16 Aug. (N. Banks) [MCZ]; 1, Ocoquan Falls, 5 Aug. 1885 [USNM]. NORTH CAROLINA: 2, Wake Co., July (H. & M. Townes) [HKT]; 10, Kill Devil Hills, Dare Co., July, Sept. (at light, K. V. Krombein) [KVK]. GEORGIA: 2, Experiment, 11 Aug. 1929 (T. Bissell) [USNM]. FLORIDA: 1, Gainesville, 10 July 1957 (at light, H. V. Weems) [FSPB]; 1, Orange Co., 21 Dec. 1929 (J. E. Sadler) [USNM]; 1, Daytona Beach, 26 July 1945 (G. T. Riegel) [INHS]; 1, Miami, 14 Sept. 1950 (F. G. Butchers) [CNC]. ALABAMA: 1, Clay Co., (H. H. Smith) [USNM]; 1, Tuscaloosa, 5 July 1949 (B. D. Valentine) [MCZ]. LOUISIANA: 1, Harahan, 1 Sept. 1944 (C. L. Remington) [INHS].

Variation in males. — The 60 males examined vary in size from 2.6 to 5.1 mm., fore wing from 2.1 to 3.7 mm. The head is black or nearly so in several specimens. The color of the abdomen varies from dark brown with paler annulations basally to wholly rufous; the majority of specimens are intermediate, as in the allotype. The antennae and legs are frequently paler than in the allotype. There is a tendency for specimens from southern parts of the range to exhibit lighter colors, but not all specimens fall in with this trend. Variation in ocellar size, width of front, and antennal length is recorded in Table VII. In occasional specimens the front is more strongly punctate than described for the allotype.

Description of female holotype. — Length 3.7 mm., LH .8 mm., LT 1.5 mm. Head and thorax bright rufo-castaneous, head slightly darker than thorax; abdomen light orange-brown; clypeus and antennae light castaneous; legs yellowish-brown, approaching amber. Mandibles with three teeth, basal tooth weak, as shown in Figure 40. Clypeus broadly truncate, median ridge strong. Head 1.18 X as long as wide, sides subparallel to just before posterior margin, where they are arcuately convergent to a broad, straight vertex. Eyes small, colored like head, barely distinguishable. Front somewhat alutaceous, weakly or barely so behind, more evidently so antero-laterally, where there is a weak tendency for the formation of longitudinal striae; punctures elongate, absent from median strip but otherwise separated by about or slightly less than their own diameters, though less crowded anteriorly than in *prolongatum*; under side of head strongly alutaceous, rather weakly punctate. Pronotal disc rather short, 1.3 X as long as its posterior width; mesonotum 1.5 X as long as wide; propodeum about 1.4 X as long as wide. Pronotum polished, barely alutaceous and not at all so medially, punctures strong but absent from median strip. Mesonotum weakly alutaceous and punctate, but center of disc smooth and shining. Propodeum shining, very weakly alutaceous, sides of disc with a number of well-defined punctures extending out onto median area more than in *prolongatum*. Mesopleurum alutaceous, weakly punctate laterally. Body and legs with setae golden, mostly rather short.

Other females. — VIRGINIA: 1, Barcroft, 9 Sept. 1934 (J. C. Bridwell) [USNM]; 1, Alexandria, 24 June 1934 (J. C. Bridwell) [USNM]; 1, Fort Lee, 10 April 1903 [MCZ].⁶ MASSACHUSETTS: 1, Blue Hills, Canton, 20 July 1956 (in nest of

⁶ No state is indicated on the label of this specimen; there is also a Fort Lee in northern New Jersey.

Formica obscuriventris under rock, W. L. Brown) [MCZ].
KANSAS: 1, Baldwin [USNM].

Variation in females.—The Virginia specimens show only very slight variation in size, color, and other characters. The Massachusetts specimen is somewhat smaller, length of body 3 mm., of head .68 mm., of thorax 1.25 mm. It is somewhat lighter in color, the head being castaneous, the thorax and abdomen light castaneous; the mandibles, clypeus, and lower sides of the head are light yellowish-brown, the legs straw-colored. In this specimen the head punctures are slightly more widely spaced and for the most part less elongate. The Kansas specimen (type of *flavicornis* Fouts), although from outside the otherwise known range of *rufiventre*, differs from the type of that species in no important way except that it is slightly paler, with the coxae bright yellowish as indicated by Fouts.

Remarks.—The distribution of this species is shown on Map 6.



Map 6.—Distribution of *P. rufiventre*, males indicated by solid circles, females by hollow circles. Distribution of *P. foutsii*, males indicated by solid triangles (females unknown).

36. PSEUDISOBRACHIUM PUSILLUM new species

Holotype. — δ , Shreveport, La., 22 June 1949 (light trap, J. H. Robinson) [INHS].

Description. — Length 2.0 mm., LFW 1.8 mm. Head piceous, thorax dark castaneous, abdomen medium brown, paler on sides of basal segments; mandibles light brown basally, apical half straw-colored, teeth rufous; antennae brown, flagellum somewhat paler beneath; legs brown, tarsi and apices of tibiae paler; wings hyaline, setulae dark, veins and stigma brown. Mandibles with four teeth, basal two teeth both strong, basal tooth somewhat thicker than third tooth. Clypeus truncate apically. Antennae with first four segments in a ratio of about 10:4:5:5, segments three and eleven each about 1.2 X as long as thick; flagellar pubescence unusually coarse, suberect, erect setae also numerous. Front of moderate breadth, WF .61 X WH, 1.25 X HE; front angle of ocellar triangle less than a right angle, ocelli only slightly enlarged, DAO .20 X WF; OOL .95 X WOT. Distance from eye tops to vertex crest .8 X HE. Front alutaceous, moderately shining, obscurely punctate. Pro- and mesonota rather strongly alutaceous, including even scutellar disc, obscurely punctate; notauli impressed on anterior .2 of mesoscutum. Propodeum about 1.7 X as long as wide, disc weakly alutaceous, depressed and carinate medially. Mesopleurum wholly alutaceous, obscurely punctate, callus small but convex. Fore wing with discoidal vein present, weakly pigmented.

Paratypes. — LOUISIANA: 3 δ δ , same data as type [INHS, MCZ], 1 δ , same data but 6 Aug. 1948 [USNM], 1 δ , same data but 28 July 1949 [CNC].

Variation. — The five paratypes show little variation in size and in standard measurements (Table VII). They do, however, exhibit considerable variation in the degree to which the vertex is extended above the eye tops; in one specimen the distance from the eye tops to the vertex measures only about .6 X HE, in two others .7, in another .8 (like the type), in another .9.

Female (assigned here tentatively). — ARKANSAS: Pike Co., 12 May 1948 (peach orchard, Turner) [USNM].

Description. — Length 1.8 mm., LH .40 mm., LT .73 mm. Head light castaneous, thorax and abdomen light yellowish-brown; antennae light castaneous, fading to dull straw-yellow apically; legs straw-colored. Mandibles with three teeth, apical two teeth large and somewhat splayed out, basal tooth small. Clypeus broadly subtruncate apically, its median carina very

sharp, reaching apical margin. Head 1.45 X as long as wide, sides weakly bulged midway, convergent behind to a broad, straight vertex. Eyes not distinguishable. Front shining, non-alutaceous, punctures small, shallow, separated for the most part by much more than their own diameters; under side of head shining, non-alutaceous, weakly punctate. Pronotal disc 1.5 X as long as its posterior width; mesonotum 1.6 X as long as wide; propodeum about 1.5 X as long as wide. Pro- and mesonota strongly shining, weakly punctate except medially, in part obscurely alutaceous. Propodeal disc very strongly shining, non-alutaceous, impunctate. Mesopleurum alutaceous, obscurely punctate. Hairs of body and legs short and pale.

Other females. — 1, same data as type [USNM].

Variation. — The second specimen measures 2.0 mm. long, head .42 mm., thorax .78 mm. The sides of the head are slightly more bulging, such that the head is only 1.37 X as long as wide.

37. PSEUDISOBRACHIUM COMANCHE new species

Holotype. — ♂, Peña Blanca, Santa Cruz Co., Arizona, 3950 feet elevation, 24 Aug. 1959 (at light, H. E. Evans) [MCZ, No. 30287].

Description. — Length 3.2 mm., LFW 2.8 mm. Head and thorax piceous, abdomen dark brown, paler on sides of basal segments; apical two-thirds of mandibles yellowish-brown, teeth rufous; antennae dull reddish-brown; front coxae infuscated, legs otherwise bright reddish-brown; wings hyaline, setulae brownish, veins and stigma brown. Mandibles with third tooth very small, fourth tooth broad; clypeus subtruncate apically. Antennae elongate, first four segments in a ratio of about 17:5:7:7, segment three 1.7 X as long as thick, segment eleven 1.4 X as long as thick; flagellar pubescence coarse, suberect, erect setae numerous, on basal segments some of them more than half as long as width of flagellum. Front narrow, WF .58 X WH, 1.17 X HE; ocelli in a compact triangle, front angle less than a right angle, slightly enlarged, DAO .22 X WF; OOL .82 X WOT. Eyes very prominent laterally, head contracted behind them to a rather narrowly rounded vertex; distance from eye tops to vertex crest about .6 X HE. Front alutaceous, moderately shining, punctures shallow and inconspicuous. Pronotum and mesoscutum alutaceous, somewhat shining, the latter somewhat more evidently punctate than the former; notauli distinct on anterior .3 of mesoscutum; scutellar disc shining. Propodeum about 1.6 X as long as broad, in

lateral view 2.6 X as long as high; disc weakly sculptured, somewhat polished; spiracles elliptical, directed dorso-laterad. Mesopleurum wholly alutaceous, with some large, shallow punctures anteriorly. Fore wing with discoidal vein lightly pigmented to about length of basal vein (Fig. 59).

Paratypes. — ARIZONA: 1 ♂, Madera Canyon, Santa Rita Mts., 4880 feet, 24 Aug. 1959 (J. G. Franclemont) [CU]; 3 ♂♂, 4 mi. W. Superior, Pinal Co., May, July (H. K. Gloyd) [INHS, USNM, MCZ]; 1 ♂, SW Research Station, 5 mi. W. Portal, Cochise Co., 5400 feet, 11 Sept. 1959 (H. E. Evans) [MCZ]. TEXAS: 1 ♂, 1 mi. E. Barstow, Ward Co., 10 July 1956 (E. G. Matthews) [CU].

Variation. — The six paratypes range in size from 3.0 to 3.9 mm., fore wing from 2.6 to 3.4 mm. There is considerable variation in ocellar size and antennal length (Table VII); the specimens from the Santa Ritas and the Chiricahuas not only have relatively small ocelli but also have the head longer behind the eyes (distance from eye tops to vertex crest about .8 X HE). Otherwise the series is of rather uniform appearance.

Remarks. — The distribution of this species is shown on Map 5.

38. PSEUDISOBRACHIUM APACHE new species

Holotype. — ♂, Peña Blanca, Santa Cruz Co., Arizona, 3950 feet elevation, 24 Aug. 1959 (at light, H. E. Evans) [MCZ, No. 30288].

Description. — Length 4.4 mm.; LFW 3.7 mm. Head black, thorax very dark brown, abdomen medium brown with indistinct banding with light brown on posterior parts of segments; apical half of mandibles light brown, teeth rufous; scape dark brown, flagellum medium brown; front coxae dark brown, legs otherwise straw-colored; wings hyaline, stigma brown, veins light brown. Mandibles with four teeth, third tooth smaller than broadly rounded basal tooth. Clypeus with apical margin slightly convex (Fig. 46), median carina high, arched in profile. Antennae with first four segments in a ratio of about 25:7:12:11, segment three nearly twice as long as maximum width, segment eleven 1.7 X as long as wide; pubescence of flagellum light, golden brown, suberect, moderately coarse, erect setae numerous but mostly rather short. WF .60 X WH, 1.10 X HE; ocelli rather large, DAO .25 X WF; posterior ocelli rather close together, front angle of ocellar triangle less than a right angle; OOL .57 X WOT. Eyes strongly bulging, measuring 1.25 X as high as wide; distance from eye tops to vertex crest equal to about half eye height. Front alutaceous, moderately shining, punctures

small, shallow, relatively inconspicuous. Pro- and mesonota strongly polished, hardly at all alutaceous, punctures small but (especially on mesoscutum) sharply defined and rather evenly spaced; notauli strong on anterior half of mesoscutum. Propodeum 1.7 X as long as wide; disc shining though with weak microscopic sculpturing; spiracles narrowly elliptical, directed dorsad. Mesopleurum strongly shining, with some sculpturing anteriorly and posteriorly; callus elongate, very weakly alutaceous. Discoidal vein of fore wing a scarcely pigmented streak which arises a short distance down on transverse median vein.

Paratypes. — ARIZONA: 1 ♂, Patagonia, Santa Cruz Co., 14 Oct. 1927 (J. A. Kusche) [CAS]; 3 ♂♂, Globe, Gila Co., July 1949 (at light) [USNM]; 7 ♂♂, 4 mi. W. Superior, Pinal Co., May-Aug. 1946-49 (at light, H. K. Gloyd, B. W. Benson) [INHS, MCZ, CU].

Variation. — The 12 available specimens range in size from 3.5 to 5.0 mm., fore wing from 3.0 to 3.9 mm. In one specimen from Globe the front is somewhat more shining than in the type, and in another specimen from that locality and one from Superior the pro- and mesonota are very weakly alutaceous; however, in every case there is marked contrast between the front and the thoracic dorsum in this regard. The amount of variation in antennal length and head measurements is unusually small (Table VIII).

39. PSEUDISOBRACHIUM FOUTSI new species

Isobrachium montanum Ashmead, 1893, Bull. U. S. Nat. Mus., 45: 39.
[♂ allotype, "Arizona" (USNM); ♀ holotype = *P. prolongatum* Prov.]

Holotype. — ♂, Port Isabel, Cameron Co., Texas, 23-27 June 1956 (at light, H. E. Evans & E. G. Matthews) [MCZ, No. 30289].

Description. — Length 4.6 mm., LFW 2.8 mm. Head dark reddish-brown, thorax castaneous, abdomen yellowish-brown except first tergite infuscated basally, all tergites somewhat paler apically; mandibles yellowish-brown, darker basally and apically; antennae light castaneous; legs wholly bright yellowish-brown; wings hyaline, with pale setulae, stigma light brown, veins pale amber. Mandibles with third tooth smaller than broad basal tooth; clypeus narrowly truncate apically (Fig. 29). Antennae with first four segments in a ratio of about 4:1:2:2, segments three and eleven each about 1.5 X as long as thick; flagellar pubescence pale, coarse, suberect, erect setae numerous but not

much longer than pubescence. Front narrow, WF .62 X WH, 1.10 X HE; ocelli enlarged, in a rather compact triangle the front angle of which is distinctly less than a right angle; DAO .26 X WF; OOL .64 X WOT. Eyes only slightly bulging, head gradually narrowed behind eyes, distance from eye tops to vertex crest about .65 X HE. Front alutaceous, weakly shining, punctures shallow and inconspicuous. Pro- and mesonota also alutaceous and rather weakly shining, obscurely punctate except somewhat more evidently so on sides of mesoscutum; notauli weakly impressed on anterior .2 of mesoscutum; scutellar disc shining but alutaceous and weakly punctate. Propodeum 1.6 X as long as broad, disc shining, weakly alutaceous but with some reticulate sculpturing anteriorly; spiracles elongate-elliptical, directed dorso-laterad. Mesopleurum wholly alutaceous, weakly punctate anteriorly, callus weakly differentiated. Fore wing with discoidal vein indicated by a faint, unpigmented streak which is interstitial with median vein (Fig. 61).

Paratypes. — TEXAS: 23 ♂♂, Port Isabel, Cameron Co., all same data as type except 2 ♂♂ 20-23 June 1948 (at light, H. E. Evans) [MCZ, CU, USNM]; 3 ♂♂, Lolita, Jackson Co., 6 July 1916 (at light, J. D. Mitchell) [USNM]; 4 ♂♂, Gillett, Karnes Co., 25 June 1917 (J. C. Bradley) [CU]; 1 ♂, Helotes, Bexar Co., 1 July 1917 (J. C. Bradley) [CU]; 16 ♂♂, Kerrville, Kerr Co., July 1952-53 (light trap, L. J. Bottimer) [USNM]; 24 ♂♂, Brazos River, Richmond, Ft. Bend Co., 22 June 1917 (at light, J. C. Bradley) [CU]; 1 ♂, Ft. Hood, Bell Co., 21 July 1955 (E. G. Matthews) [CU].

Other material examined. — The following specimens are assigned here tentatively but are not to be considered paratypes: TEXAS: 4 ♂♂, Brownsville, Cameron Co., June, Sept., Oct. [USNM, CAS, KU]; 1 ♂, Mission, Hidalgo Co., 27 Sept. 1951 (Cartwright & Gurney) [USNM]; 1 ♂, Knippa, Uvalde Co., 3 July 1910 (F. C. Pratt) [USNM]; 1 ♂, Juno, Val Verde Co., 3 July 1917 (J. C. Bradley) [CU]; 1 ♂, Lozier Canyon, Terrell Co., 8 July 1948 (at light in desert, Werner & Nutting) [USNM]; 1 ♂, Limpia Canyon, Davis Mts., 7 July 1917 (J. C. Bradley) [CU]; 1 ♂, "Tex." [ANSP]. NEW MEXICO: 2 ♂♂, Roswell, 17 Aug. 1951 (at light, H. E. Evans) [MCZ]; 2 ♂♂, Lordsburg, 13-17 July 1917 (J. C. Bradley, J. Bequaert) [CU, MCZ]; 5 ♂♂, Deming, 12-17 July (W. M. Wheeler) [MCZ]. ARIZONA: 1 ♂, Portal, Cochise Co., 5 Sept. 1959 (at light, H. E. Evans) [CU]; 1 ♂, Paradise, Cochise Co., 17 Sept., 1927 (J. A. Kutsche) [CAS]; 4 ♂♂, Texas Canyon, Cochise Co., Sept.,

Oct. (J. A. Kusche) [CAS]; 6 ♂♂, Willecox, 3 Sept. 1959 (at light, H. E. Evans) [CU, MCZ]; 1 ♂, Huachuca mts., 14 Sept. 1933 (R. H. Crandall) [UA]; 2 ♂♂, Safford, 23 June 1954 (light trap, F. G. Werner) [UA]; 10 ♂♂, 4 mi. W. Superior, Pinal Co., May, July (at light, H. K. Gloyd) [INHS]; 2 ♂♂, Canelo, Santa Cruz Co., 10 July 1957 (G. D. Butler) [UA]; 1 ♂, Patagonia, Santa Cruz Co., 14 Oct. 1927 (J. A. Kusche) [CAS]; 2 ♂♂, Tucson, Aug. (R. H. Crandall) [UA]; 1 ♂, Tuba City, Coconino Co., 27 July 1954 (at light, H. E. & M. A. Evans) [CU]. CALIFORNIA: 32 ♂♂, Blythe, Riverside Co., 6-20 Aug. 1947 (light trap, J. W. MacSwain) [CIS, MCZ]; 1 ♂ Thermal, Riverside Co., 17-18 Aug. 1927 [CU]; 6 ♂♂, Riverside, 24 Sept. 1935 (H. H. Keifer) [CDAS]; 1 ♂, El Centro, Imperial Co., 11 Sept. 1959 (light trap, C. R. Waegner) [CDAS]; 1 ♂, Chula Vista, San Diego Co., 26 Sept. 1935 (H. H. Keifer) [CDAS]; 1 ♂, Lancaster, Los Angeles Co., 26 Aug. 1958 (in alfalfa field, E. I. Schlinger) [USNM]; 1 ♂, 8 mi. NW Winters, Yolo Co., 22 July 1959 (light trap, J. Fowler) [UCD]. COAHUILA: 1 ♂, Tanque de Malone, La Bahia, 20 June 1938 (R. H. Baker) [USNM].

Variation.—The amount of variation in this species is bewildering, and I concede the possibility that I may be confusing several species under one name. Most specimens from eastern Texas agree reasonably well in size, color, and standard measurements, and I have little doubt that they are conspecific with the Port Isabel type; I have therefore designated these specimens as paratypes. Specimens from southern and western Texas, Coahuila, New Mexico, Arizona, and California may be in part or wholly conspecific with the type series; I have identified these specimens as *foutsii* but prefer not to designate them as paratypes.

The smallest specimen in the entire series is from Lancaster, California (length 1.6 mm., LFW 1.6 mm.) while the largest is from Texas Canyon, Arizona (length 4.7 mm., LFW 3.6 mm.). Specimens from western parts of the range tend to be darker in color; for example, the series from Willecox, Arizona, and most California specimens have the entire body dark brown and the antennae and legs brown. On the other hand, the specimens from Blythe, California, have the abdomen rufous and the legs wholly straw-colored. The two specimens from Canelo, Arizona, are similarly colored, but in these the front is unusually strongly punctate. In two of the four Brownsville, Texas, specimens the head is rather long behind the eyes (distance from eye tops to vertex crest .7-.9 X HE), and this is true of many Arizona and most California specimens, though there is much variation in

this regard in most series from one locality. In some specimens (mainly of somewhat peripheral distribution, see Table VIII) the ocelli are enlarged only slightly. The broadest front occurs in the series from Riverside, California, although this is approached by specimens from other California, Arizona, and New Mexico localities. The mandibles of some Arizona specimens have the basal tooth scarcely any wider than the third tooth (Fig. 30).

Remarks.—This nocturnal, chiefly deserticolous species is named for Robert M. Fouts, of Laredo, Texas, the only North American worker to have directed attention to these wasps up to this time. The female has yet to be discovered. The distribution is shown on Map 6.

TABLE VIII

Species and locality	No.	LFW	WF/HE	OOL/WOT	DAO/WF	Ant. 11 L/W
<u>foutsii</u>						
Richmond, Tex.	24	2.6 (2.1-3.0)	1.3 (1.05-1.21)	.62 (.53-.69)	.28 (.25-.31)	1.2 (1.1-1.3)
Ft. Hood, Tex.	1	2.6	1.06	.50	.30	1.4
Helotes, Tex.	1	2.9	1.00	.40	.31	-
Gillett, Tex.	4	2.2 (2.0-2.7)	1.17 (1.06-1.33)	.64 (.47-.75)	.24 (.18-.29)	1.1 (1.0-1.3)
Lolita, Tex.	3	2.6 (2.3-2.9)	1.22 (1.14-1.35)	.57 (.54-.62)	.27 (.25-.28)	1.3 (1.2-1.4)
Mission, Tex.	1	2.8	1.34	.88	.18	1.5
Brownsville, Tex.	4	2.7 (2.4-3.0)	1.13 (.93-1.27)	.61 (.40-.76)	.28 (.23-.39)	1.3 (1.0-1.5)
Port Isabel, Tex.	24	2.4 (1.9-2.8)	1.20 (1.13-1.30)	.70 (.62-.79)	.24 (.23-.26)	1.2 (1.0-1.4)
Kerrville, Tex.	16	2.4 (1.8-2.9)	1.05 (.95-1.16)	.56 (.39-.91)	.29 (.20-.33)	1.3 (1.1-1.5)
Knippa, Tex.	1	1.9	1.22	.70	.20	1.1
Juno, Tex.	1	1.8	1.22	.80	.20	1.0
Terrell Co., Tex.	1	1.9	1.11	.56	.27	1.3
Jeff Davis Co., Tex.	1	2.5	1.15	.55	.25	1.3
Roswell, N. Mex.	2	3.0 (2.9-3.1)	1.15	.51 (.50-.52)	.26 (.25-.27)	1.2
Lordsburg, N. Mex.	2	2.9	1.28 (1.18-1.38)	.59 (.42-.76)	.26 (.22-.30)	1.3
Deming, N. Mex.	5	3.2 (3.0-3.4)	1.48 (1.33-1.59)	.71 (.64-.77)	.21 (.18-.24)	1.3 (1.2-1.4)
Cochise Co., Ariz.	13	2.9 (1.9-3.6)	1.28 (1.12-1.48)	.68 (.52-.87)	.23 (.17-.27)	1.3 (1.1-1.5)
Safford, Ariz.	2	2.8	1.37 (1.34-1.40)	.73 (.69-.76)	.23 (.22-.24)	1.1
Superior, Ariz.	8	2.4 (1.9-2.8)	1.26 (1.17-1.36)	.85 (.80-.91)	.22 (.21-.24)	1.3 (1.2-1.4)
St. Cruz Co., Ariz.	3	3.3 (3.2-3.4)	1.27 (1.20-1.34)	.77 (.70-.85)	.21 (.20-.23)	1.3 (1.2-1.4)
Tucson, Ariz.	2	2.9 (2.8-3.0)	1.16 (1.07-1.25)	.67 (.62-.72)	.24 (.22-.26)	1.2
Coconino Co., Ariz.	1	2.5	1.32	.78	.23	1.1
Blythe, Cal.	32	3.0 (2.5-3.5)	1.32 (1.10-1.54)	.81 (.64-1.00)	.20 (.17-.23)	1.3 (1.1-1.4)
El Centro, Cal.	1	2.5	1.25	.83	.21	-
Riverside, Cal.	6	3.2 (3.0-3.4)	1.50 (1.44-1.60)	.90 (.78-1.06)	.17 (.16-.18)	1.3
Thermal, Cal.	1	2.8	1.13	.76	.22	1.1
San Diego Co., Cal.	1	2.6	1.14	.62	.23	1.3
Los Angeles Co., Cal.	1	1.6	1.00	.52	.29	1.3
Yolo Co., Cal.	1	2.7	1.30	.80	.22	1.4
La Bamba, Coahuila	1	2.3	1.27	.71	.20	1.2
<u>emarginatum</u>						
Kerrville, Texas	3	2.6 (2.5-2.7)	1.30 (1.26-1.33)	.86 (.82-.90)	.17 (.16-.18)	1.3 (1.2-1.5)
<u>apache</u>						
Peña Blanca, Ariz.	1	3.7	1.10	.57	.25	1.7
Patagonia, Ariz.	1	3.5	1.16	.62	.25	1.5
Globe, Ariz.	3	3.4 (3.0-3.7)	1.16 (1.10-1.26)	.62 (.56-.73)	.26 (.24-.28)	1.6 (1.4-1.8)
Superior, Ariz.	7	3.5 (3.1-3.9)	1.16 (1.13-1.19)	.63 (.55-.68)	.25 (.24-.26)	1.6 (1.5-1.7)

40. PSEUDISOBRACHIUM EMARGINATUM new species

Holotype.— δ . Kerrville, Texas, 10-14 July 1953 (light trap, L. J. Bottimer) [USNM, no. 65155].

Description.—Length 3.4 mm., LFW 2.6 mm. Head and thorax black, abdomen dark brown, somewhat paler on sides of basal segments; apical half of mandibles yellowish, teeth rufous;

scape dark brown, flagellum medium brown; front coxae dark brown, remaining coxae and all femora medium brown, rest of legs light brown; wings hyaline, setulae light brown, veins and stigma very light brown. Mandibles with third tooth small, fourth tooth broad. Clypeus with median carina low, weakly arched; apical margin distinctly arcuately concave (Fig. 49). First four antennal segments in a ratio of about 17:5:8:7, segment three and segment eleven each about 1.5 X as long as thick; flagellar pubescence pale, very coarse and suberect, erect setae numerous and rather long. Front of moderate breadth, WF .64 X WH, 1.33 X HE; ocelli only very slightly enlarged, DAO .17 X WF; OOL .90 X WOT; ocelli well separated, front angle of ocellar triangle less than a right angle. Eyes rather bulging, head narrowed behind the eyes, vertex rather evenly rounded off a distance above the eyes equal to about three fourths eye height. Front shining, weakly alutaceous, punctures close though shallow and rather inconspicuous. Pronotum and mesoscutum more strongly alutaceous and less shining, barely punctate; notauli weakly impressed on anterior .3 of mesoscutum; scutellar disc shining. Propodeum about 1.5 X as long as wide, disc wholly alutaceous though somewhat shining; spiracles small, elliptical, directed dorso-laterad. Mesopleurum wholly alutaceous, without strong punctures, callus large, moderately convex. Fore wing with discoidal vein represented only by an unpigmented streak.

Paratypes. — 2 ♂♂, same data as type [USNM, MCZ].

Variation. — The two paratypes are similar to the type in size and coloration. However, in both of them the front is more strongly alutaceous and less shining than in the type, the antennae are shorter and somewhat lighter brown, and the legs are also lighter brown.

41. PSEUDISOBRACHIUM RECTANGULATUM new species

Holotype. — ♂, Red River, Wilbarger Co., Texas, 5 July 1956 (at light, H. E. Evans and E. G. Matthews) [MCZ, No. 30291].

Description. — Length 2.8 mm.; LFW 2.2 mm. Head dark reddish-brown, thorax medium brown, abdomen light brown basally, darker beyond; mandibles, clypeus, and antennae light reddish-brown; legs wholly light brown; wings hyaline, setulae pale, veins and stigma light brown. Mandibles as in preceding species. Clypeus narrowly truncate apically, its truncate apical margin very slightly longer than third antennal segment; median carina weakly arched in profile. Antennae with first four segments in a ratio of about 17:4:7:7, segment three about 1.4 X

as long as wide, segment eleven 1.2 X as long as wide; flagellar pubescence pale, short, subappressed, erect setae short and sparse. WF .65 X WH, 1.31 X HE: ocelli slightly enlarged, DAO .20 X WF; ocelli in a broad triangle, front angle a right angle, OOL .75 X WOT. Vertex broadly rounded a distance above eye tops equal to about two-thirds X HE. Front alutaceous, moderately shining, with small, rather shallow punctures which are separated from one another by somewhat more than their own diameters. Pronotum and mesoscutum alutaceous, moderately shining, obscurely punctate; notauli distinct for anterior .3 of mesoscutum; scutellar disc weakly alutaceous, somewhat shining. Propodeum about 1.5 X as long as broad, disc alutaceous, median carina strong; spiracles small, subcircular, directed dorso-laterad. Mesopleurum wholly alutaceous, callus not especially well defined. Fore wing with discoidal vein indicated only by an unpigmented streak which is interstitial with medial vein.

Paratypes.—TEXAS: 2 ♂♂, same data as type [CU, USNM]; 1 ♂, Victoria, 19 Aug. 1912 (J. D. Mitchell) [USNM]. NEBRASKA: 1 ♂, Sidney, 2 Aug. 1936 (H. H. Ross) [INHS]. KANSAS: 1 ♂, Grant Co., 18 Aug. 1952 (at light, H. E. Evans) [MCZ].

The following additional specimen is assigned here tentatively and is not to be regarded a paratype: NUEVO LEON: 1 ♂, Vallecillo, 2-5 June 1951 (at light, H. E. Evans) [MCZ].

Variation.—The two topotypic paratypes resemble the type closely, showing only slight differences in ocellar size. The Kansas and Nebraska specimens are somewhat darker in color and the front is broader; the Nebraska specimen is a little more noticeably punctate on the head and thorax than the type, the Kansas specimen less so. The specimen from Victoria, Texas, has shorter and slightly paler antennae but is otherwise close to the type. In the Nuevo Leon specimen the front is narrow and somewhat more shining and more distinctly punctate than in the rest of the series; the ocelli are rather large and close together; the distance from the eye tops to the vertex crest is equal to only slightly more than half the eye height; the mesopleural callus is large and somewhat convex and shining. Altogether this specimen presents a somewhat different appearance and may well represent a distinct species.

42. PSEUDISOBRACHIUM FLAVINERVIS Fouts

Pseudisobrachium flavinervis Fouts, 1928, Proc. Ent. Soc. Wash., 30: 123.

[Type: ♂, Lone Star, Calif., 21 Sept. 1927 (taken from soil) (USNM, no. 41217)].

Description of type. — Length 4.0 mm.; LFW 3.2 mm. Head piceous, thorax dark reddish-brown, abdomen brown, obscurely banded with light brown; mandibles light brown, teeth rufous; scape light brown, flagellum bright, pale castaneous; front coxae brownish, legs otherwise straw-colored; wings very pale, setulae pale, stigma very light brown, veins nearly colorless. Mandibles with third tooth small, basal tooth broad, arching into inner mandibular margin (Fig. 31). Clypeus narrowly truncate apically, median carina barely arched in profile. Antennae with first four segments in a ratio of about 20:6:8:7, segment three and segment eleven each about 1.3 X as long as thick; pubescence of flagellum very pale, short, subappressed, erect setae very sparse, short, and inconspicuous. Front narrow, WF .63 X WH, 1.10 X HE; ocelli large; DAO .28 X WF; OOL .44 X WOT, latter very broad, front angle greater than a right angle. Distance from eye tops to vertex crest equal to only about half eye height; eyes rather long, not strongly bulging, rather weakly hairy (Fig. 6). Front alutaceous, moderately shining, with small but well-defined punctures which are separated from one another by slightly more than their own diameters. Pro- and mesonota alutaceous, somewhat shining, only rather obscurely punctate; notauli impressed on anterior .3 of mesoscutum; disc of scutellum shining, with a few punctures. Propodeum 1.45 X as long as broad; disc alutaceous, with a strong median carina; spiracles small, elongate, directed somewhat dorsad. Mesopleurum alutaceous, with some small punctures antero-ventrally; callus not especially strongly defined. Discoidal vein of fore wing represented by a faint, unpigmented streak which arises well below junction of basal and transverse median veins (Fig. 62).

Specimens examined. — CALIFORNIA: 1 ♂, Lone Star, Fresno Co., 21 Sept. 1927 [USNM]; 2 ♂♂, Mojave, Kern Co., 25 July 1947 (R. H. Beamer) [KU]; 2 ♂♂, Llano, Los Angeles Co., 12 July 1956 (E. I. Schlinger) [UCD]; 2 ♂♂, Nr. Hingley, San Bernardino Co., 1 Aug. 1927 (Rehn, Pate, Rehn) [ANSP]; 1 ♂, Victorville, 15 Aug. 1927 (J. C. Bradley) [CU]; 2 ♂♂, Thermal, Riverside Co., 17 Aug. 1927 (J. C. Bradley) [CU]; 12 ♂♂, Blythe, Riverside Co., 6 July, 20 Aug. 1947 (light trap, Barr & MacSwain) [CIS]; 10 ♂♂, Holtville, Imperial Co., Sept., Oct. 1959 (light trap, C. R. Waegner) [CDAS]; 6 ♂♂, El Centro, 12 Oct. 1959 (light trap, C. R. Waegner) [CDAS]; 6 ♂♂, Imperial, 19-22 Oct. 1959 (light trap, C. R. Waegner) [CDAS]; 2 ♂♂, Calexico, 22 Oct. 1959 (C. R. Waegner); 1 ♂, Winterhaven, 3 Sept. 1959 (light trap, C. R. Waegner) [CDAS]; 15 ♂♂, Imperial Co., June 1912 (J. C. Bridwell)

[USNM]. BAJA CALIFORNIA: 2 ♂♂, San Felipe, June 1939 (Michelbacher & Ross) [CAS]; 1 ♂, Coyote Cove, Conception Bay, 29 June 1938 (Michelbacher & Ross) [CAS]. SONORA: 4 ♂♂, Hermosillo, 25 June 1959 (at light, H. E. Evans) [CU, MCZ]. ARIZONA: 1 ♂, Quartzite, Yuma Co., 20 Aug. 1927 (J. C. Bradley) [CU]; 8 ♂♂, Wellton, Yuma Co., Aug., Sept. [CU, MCZ]; Palomas, Yuma Co., 8 Aug. 1917 (J. C. Bradley) [CU]; 4 ♂♂, Gila Bend, 17 Sept. 1938 (R. H. Crandall) [UA]; 4 ♂♂, Phoenix, Aug., Sept. [CU, UA]; 2 ♂♂, Higley, 29 July (at light, J. Bequaert) [MCZ]; 7 ♂♂, Roosevelt Lake, 11 Aug. 1949 [USNM]; 135 ♂♂, 4 mi. W. Superior, June-Oct. (light trap, Gloyd, Benson) [INHS, USNM, MCZ]; 1 ♂, Florence [USNM]; 4 ♂♂, Maricopa, 17 Oct. 1927 (J. A. Kusche) [CAS]; 5 ♂♂, Tucson, June-Aug. [CAS, UA]; 5 ♂♂, Sabino Canyon, Santa Catalina Mts., July, Aug. [KVK, UA]; 1 ♂, Organ Pipe Nat. Mon., 8 May 1955 (light trap, J. Eden) [UA]; 1 ♂, Baboquivari Canyon, W. side Baboquivari Mts., 25 July 1952 [CAS]. NEVADA: 1 ♂, Las Vegas, 30 June 1940 (A. L. Melander) [MCZ]. TEXAS: 1 ♂, Valentine, 12 July 1938 (R. H. Beamer) [KU].

Variation. — The 247 males examined show a size range from 2.0 to 5.2 mm., with most specimens between 3.5 and 4.5 mm.; fore wing size ranges from 1.6 to 3.7 mm. Some specimens are lighter in color than the type, and in some specimens from southern California and from western Arizona the abdomen is distinctly paler than the head and thorax. In many specimens from these areas the clypeus is light yellowish-brown, contrasting to the much darker front; this is true, for example, of the series from Gila Bend and from Roosevelt Lake, Arizona. In the majority of specimens the front is rather strongly shining and only weakly alutaceous, but in every specimen the punctures are distinct. Variation in width of front, ocellar size, and other critical measurements is moderate (Table IX). Specimens from the extreme southern and eastern ends of the range are rather remarkably different in certain measurements. The specimen from Conception Bay, Baja California, has the vertex elevated far above the eye tops and broadly squared off; the ocelli are unusually small and the ocello-ocular line nearly as great as the width of the ocellar triangle. One of the specimens from northern Baja California shows tendencies in these directions, and thus it seems possible that the Conception Bay specimen merely represents the end of a cline. The specimen from Valentine, Texas, has a remarkably broad front and unusually strong

notauli. Despite this variation, *flavinervis* is one of the more distinctive species of the genus by virtue of the light, smooth antennae, the rather long, weakly hairy eyes, and the punctate front.

Female (assigned here tentatively).—ARIZONA: 4 mi. W. Superior, 15 June 1948 (light trap, H. K. Gloyd) [INHS].

Description of female.—Length of body 2.7 mm., LH .6 mm., LT 1.1 mm. Head dark castaneous, thorax and abdomen medium castaneous; apical half of mandibles, clypeus, and antennae light yellowish-brown; legs yellowish-brown. Mandibles with four teeth, third tooth and particularly fourth tooth very small (about as in Fig. 38). Clypeus weakly emarginate medially, median carina strong. Head 1.4 X as long as wide, sides weakly, gradually convergent to near posterior margin, where they are more abruptly, arcuately convergent. Eyes small, paler than background, no larger than a head puncture. Punctures of front absent from median strip, well separated laterally and posteriorly (mostly by slightly more than their own diameters), anteriorly decidedly crowded (separated by less than their own diameters); front alutaceous and with a weak tendency to be longitudinally striate (less evident on sides than submedially); under side of head strongly alutaceous, punctate. Pronotal disc 1.4 X as long as wide; mesonotum slender, 1.7 X as long as wide; propodeum slender, gradually tapered anteriorly, about 1.7 X as long as

TABLE IX

Species and locality	No.	LFW	WF/HE	OOL/WOT	DAO/WF	Ant. 11 L/W
<i>flavinervis</i>						
Lone Star, Cal.	1	3.2	1.10	.44	.28	1.3
Mojave, Cal.	2	3.1 (3.0-3.2)	1.18 (1.16-1.20)	.45	.26 (.24-.28)	1.2
Llano, Cal.	2	2.8	1.13	.47 (.44-.50)	.25 (.24-.26)	1.3
Hincley, Cal.	2	3.0 (2.9-3.2)	1.13	.39 (.38-.40)	.25	1.3
Victorville, Cal.	1	3.1	1.18	.49	.23	1.3
Thermal, Cal.	2	2.7 (2.5-2.9)	1.10 (1.08-1.12)	.58 (.53-.64)	.22 (.20-.24)	1.3
Blythe, Cal.	12	2.4 (2.0-2.8)	1.09 (1.05-1.13)	.55 (.50-.60)	.24 (.22-.26)	1.2 (1.1-1.3)
El Centro and vic.	39	2.9 (2.2-3.3)	1.07 (.97-1.18)	.47 (.38-.56)	.25 (.23-.30)	1.3 (1.2-1.5)
Winterhaven, Cal.	1	2.9	1.12	.63	.23	1.3
San Felipe, Baja Cal.	2	2.9 (2.6-3.2)	1.10 (1.00-1.20)	.57 (.46-.68)	.25 (.23-.27)	1.3 (1.2-1.4)
Conception Bay, B. C.	1	2.5	1.29	.89	.17	1.3
Hermosillo, Sonora	4	2.4 (2.0-2.7)	1.12 (1.05-1.17)	.52 (.46-.55)	.23 (.22-.25)	1.1
Yuma Co., Ariz.	11	2.6 (2.1-3.0)	1.12 (1.04-1.21)	.51 (.45-.67)	.24 (.21-.25)	1.3 (1.1-1.4)
Maricopa Co., Ariz.	10	2.7 (2.3-3.2)	1.10 (.98-1.23)	.46 (.37-.59)	.24 (.22-.25)	1.3 (1.1-1.4)
Gila Co., Ariz.	7	2.5 (2.4-2.6)	1.18 (1.12-1.24)	.58 (.54-.63)	.23 (.22-.24)	1.3 (1.2-1.4)
Pinal Co., Ariz.	135	2.5 (1.6-3.1)	1.13 (1.00-1.24)	.57 (.48-.62)	.23 (.20-.26)	1.3 (1.1-1.4)
Pima Co., Ariz.	12	2.7 (2.3-3.2)	1.20 (1.11-1.27)	.59 (.46-.72)	.22 (.20-.26)	1.2 (1.1-1.3)
Las Vegas, Nev.	1	3.0	1.07	.40	.27	1.2
Valentine, Texas	1	2.5	1.52	.78	.19	1.2
<i>rectangulatum</i>						
Sidney, Nebr.	1	2.9	1.40	.72	.22	1.2
Grant Co., Kansas	1	2.5	1.42	.82	.19	1.2
Wilbarger Co., Tex.	3	2.1 (2.0-2.2)	1.31 (1.29-1.32)	.77 (.75-.79)	.21 (.19-.22)	1.2
Victoria, Tex.	1	2.4	1.30	.69	.20	1.0
Valleclillo, N. Leon	1	2.5	1.08	.60	.24	1.1
<i>macrops</i>						
Port Isabel, Tex.	2	2.9	.98 (.94-1.02)	.29 (.28-.30)	.36 (.35-.37)	1.2
San Juan, Tex.	1	2.8	1.05	.33	.36	1.2

wide. Pronotal disc strongly shining, with sparse, rather weak punctures; mesonotum wholly although weak alutaceous; propodeum also wholly alutaceous, although very weakly so medially and strongly shining here, sides obscurely punctate. Mesopleurum alutaceous, obscurely punctate. Hairs of body and legs short, pale.

Remarks.—The female described above was taken in a light trap at the same time and place as a long series of males (also some males of *obscurum*). I feel fairly certain that it properly belongs with *flavinervis*, less certain as to how to clearly distinguish it from other females of this complex. The distribution of this species is shown on Map 3.

43. PSEUDISOBRACHIUM MACROPS new species

Holotype.—♂, Port Isabel, Cameron Co., Texas, 23-27 June 1956 (at light, H. E. Evans and E. G. Matthews) [MCZ, No. 30292].

Description.—Length 4.4 mm.; LFW 2.9 mm. Head black, thorax dark reddish-brown, abdomen bright rufo-castaneous; mandibles light brown, teeth rufous; scape light brown; flagellum dull rufo-castaneous; legs, including all coxae, pale straw-colored; wings hyaline, veins and stigma brown. Mandibles with third tooth small, fourth broad and arching into inner mandibular margin. Clypeus truncate apically, median carina weakly arched in profile. First four antennal segments in ratio of about 20:5:9:9, segment three 1.5 X as long as thick, segment eleven 1.2 X as long as thick; pubescence of flagellum pale, rather coarse, semi-erect, erect setae fairly numerous, toward the base some of them nearly half as long as thickness of flagellum. WF .56 X WH, 0.94 X HE; ocelli remarkably large and convex, DAO .37 X WF; OOL .30 X WOT, actually less than diameter of an ocellus; front angle of ocellar triangle greater than a right angle. Vertex elevated above eye tops a distance equal to about half HE; eyes distinctly more hairy than in *flavinervis*. Front strongly alutaceous, rather weakly shining, punctures shallow and less conspicuous than in *flavinervis*, separated from one another by from 1 to 1.5 X their own diameters. Mesoscutum somewhat more strongly shining and more distinctly punctate than pronotum; notauli strong on anterior .4 of mesoscutum; disc of scutellum strongly shining. Propodeum 1.35 X as long as broad, disc weakly alutaceous, shining, median carina strong; spiracles elliptical, directed somewhat dorsad. Mesopleural callus

elongate, moderately convex, shining, somewhat alutaceous; anterior and ventral portions of mesopleurum more strongly alutaceous and with some punctures. Fore wing with discoidal vein only very weakly indicated, arising somewhat below junction of basal and transverse median veins.

Paratypes. — TEXAS: 1 ♂, same data as type [CU]; 1 ♂, San Juan, Hidalgo Co., 28 June 1938 (L. W. Hepner) [KU].

Variation. — In both paratypes the front is relatively a little wider than in the type. In the San Juan specimen the mesoscutum is not noticeably more shining or punctate than the pronotum and the punctures of the front are smaller.

ANOMALOUS MALES

Under this heading are considered three species known from males only, none of which fit well into any of the six species-groups recognized. The first two of these species possess five-toothed mandibles and genitalia of unusual form as well as certain unique features; I would expect these two species to have evolved from a primitive stock independently of each other and of other known species. The third species, *superbum*, has only three mandibular teeth and the median carina of the propodeum replaced by some weak, irregular longitudinal rugae; the genitalia of this species are of the conventional *Pseudisobrachium* type. I would regard this as one of the more highly evolved members of the genus.

44. PSEUDISOBRACHIUM PETIOLATUM new species

Holotype. — ♂, Tabernilla, Canal Zone, 27 April 1907 (August Busek) [USNM, no. 65385].

Description. — Length 3 mm.; LFW 2 mm. Head piceous; thorax and abdomen castaneous, petiole somewhat infuscated; legs light brown; antennae medium brown; fore wing very faintly clouded, veins and stigma brown. Mandibles with five sharp teeth in an oblique series (Fig. 7). Clypeus broadly rounded apically, its median carina sharp except at base and apex. Antennae very long, flagellum clothed with semirecumbent pubescence of moderate length plus a few longer, suberect setae; first four antennal segments in a ratio of about 4:1:4:3; antennal segment eleven about twice as long as thick. WF .56 X WIL, about equal to HE; OOL 1.10 X WOT, ocelli of moderate size, in a compact triangle, anterior ocellus situated well above eye

tops. Front strongly alutaceous but somewhat shining, the punctures shallow and relatively inconspicuous. Occipital carina complete. Pronotum long, collar subfoveolate. Mesoscutum alutaceous, weakly shining; notauli strong on anterior .7, absent behind; scutellum wholly alutaceous, anterior groove and lateral foveae rather shallow. Propodeum 1.6 X as long as wide, median carina weak, extending for about half its length; lateral carinae strong, the groove above them subfoveolate; spiracles very large, subcircular, directed dorsad. Mesopleurum wholly alutaceous, the front half roughened by large punctures. Fore wing with discoidal vein strong, arising well down on transverse median vein; basal vein erect, reaching subcosta far basad of stigma (Fig. 52). First abdominal segment with a rather long petiole (Fig. 68). Genitalia with the parameres deeply divided into two lobes; digitus and cuspis complex, the latter somewhat disc-shaped, with marginal setae; basis volsellaris weakly developed and without any evidence of a vannus; aedoeagus simple, deeply divided apically, one half somewhat angled (probably an artifact) (Fig. 65).

Remarks. — This unusual species has a clypeus and genitalia unlike those of any other species, but more like those of other genera of *Pristocerini*. The complete occipital carina suggests *Propristocera*, and the petiolate abdomen is much like that of *P. laevigata*. However, the hairy eyes, type of antennal pubescence, and many features of the genitalia suggest that this species properly belongs in *Pseudisobrachium*.

45. PSEUDISOBRACHIUM ANOMALUM new species

Holotype. — ♂, Arlington, Va., July 19, 1952 (K. V. Krombein) [USNM, no. 65386].

Description. — Length 3.5 mm.; LFW 2.2 mm. Head black; thorax and abdomen dark brownish-fuscous; legs pale castaneous, except front coxae infuscated; mandibles yellowish, infuscated basally, teeth rufous; antennae yellowish-brown, somewhat darker beyond basal four segments; wings hyaline, stigma brown, veins very light brown. Mandibles with five strong teeth in an oblique series (Fig. 8). Median lobe of clypeus weakly emarginate apically. Antennae rather short, flagellum with rather coarse, semirecumbent pubescence and a few erect setae which are nearly half as long as width of flagellum; first four antennal segments in a ratio of about 15:5:7:6; segment eleven about 1.3 X as long as thick. WF .66 X WH, 1.35 X HE; OOL 1.3 X

WOT, ocelli small, in a compact triangle, the front ocellus well above level of eye tops. Front rather strongly shining, but slightly duller and more noticeably alutaceous anteriorly and also behind ocellar triangle; punctures strong, especially so above the eyes, separated from one another by about their own diameters. Pronotum short, rather roughly punctate. Mesoscutum strongly shining, especially between notauli, where it is not at all alutaceous; mesoseutal punctures strong, very sparse medially, more crowded laterally; notauli impressed on anterior .9 of mesoscutum. Scutellum shining, punctate, the basal groove deep, the lateral foveae shallow. Propodeum 1.3 X as long as broad; median carina distinct, dorsal surface otherwise completely covered with a reticulum of rather strong ridges; spiracles small, elliptical, directed laterad. Mesopleural callus shining, non-alutaceous, the remainder of the mesopleura more or less alutaceous and pitted. Fore wing with transverse median vein suberect, weakly arched; discoidal vein absent (Fig. 54). Abdomen sessile, rather short and broad. Aedoeagus strongly compressed, of complex structure; inner arm of paramere very slender, digitiform; vannus strong, bearing the radiating ridges characteristic of all species of *Pseudisobrachium* except *pectiolatum* (Figs. 64, 67).

Paratypes.—NEW JERSEY: 1 ♂, Moorestown, 23 July 1939 (H. & M. Townes) [HKT]. FLORIDA: 1 ♂, Okaloosa Co., 31 July 1955 (F. W. Mead) [FSPB]. ILLINOIS: 1 ♂, Alto Pass 13 Aug. 1891 (C. A. Hart) [INHS].

Variation.—The paratypes are all slightly smaller than the type (LFW 2.0-2.1 mm.). In the New Jersey specimen the head and thorax are dark castaneous, the abdomen somewhat lighter; in the Illinois specimen the entire body is castaneous; in the Florida specimen the body is wholly nearly black and the femora and coxae somewhat infuscated. The antennae of the Florida specimen are bright yellowish-brown with a tinge of rufous. In the New Jersey and Florida specimens the antennae are shorter than in the type, segment eleven measuring 1.1-1.2 X as long as thick. WF measures .67-.68 X WH, 1.39-1.45 X HE. In the Florida specimen the ocellar triangle is rather wide, OOL only 1.1 X WOT. In the New Jersey specimen the posterior half of the mesoscutum is weakly alutaceous, even between the notauli, as are the mesopleural calli; this specimen is lacking all but the basal three segments of the gaster. In the New Jersey and Illinois specimens the pronotum has a shallow transverse groove before the posterior margin.

46. PSEUDISOBRACHIUM SUPERBUM new species

Holotype. — δ , Cano Saddle, Gatun Lake, Panama, 17 May 1923 (R. C. Shamon) [USNM, no. 65387].

Description. — Length 5.2 mm.; LFW 3.8 mm. Head and thorax shining black, propodeum piceous, abdomen piceous except suffused with pale reddish-brown laterobasally; mandibles yellow, teeth rufous; scape yellow, flagellum light reddish-brown; legs entirely straw-yellow, tarsi slightly darker than the rest; wings subhyaline, veins and stigma brown. Mandibles slender, with only three apical teeth, the basal tooth rounded (Fig. 32). Clypeus unusually large, broadly truncate apically. Antennae of moderate length; first four segments in a ratio of about 15:3:11:8, segment eleven twice as long as thick; flagellar pubescence pale, appressed, erect setae numerous, short, some of them extremely thin. WF .61 X WH, 1.15 X HE; ocelli of moderate size, DAO .16 X WF; ocelli in a compact triangle, the front angle less than a right angle; OOL 1.18 X WOT. Vertex narrowly rounded, extending above eye tops a distance equal to slightly more than half the eye height; occipital carina complete. Front strongly shining, non-alutaceous, with small but sharply defined and deep punctures; these punctures are close together on the lower front, but on the vertex they are separated by about three times their own diameters. Pronotal disc unusually flat, unusually wide in front, shining and with strong, sparse punctures. Mesoseutum strongly shining, non-alutaceous, with only a few punctures, these mostly on the sides; notauli very strong, complete. Disc of scutellum strongly shining medially, laterally with some minute punctures. Propodeum about 1.3 X as long as broad, its entire dorsal surface crossed by close transverse ridges, medio-basally with several irregular longitudinal ridges, but without a well-defined single median carina; spiracles nearly circular, directed dorsad. Mesopleurum shining, non-alutaceous, with large, widely separated punctures except on the callus, which is smooth. Genitalia differing from the usual form of the genus only in that the dorsal branch of the paramere is rather suddenly contracted subapically (Fig. 66). Discoidal vein of fore wing weakly pigmented for a short distance, interstitial with median vein; stigma unusually large (Fig. 51).

Paratype. — 1 δ , Pacora, Canal Zone, May 13, 1953 (F. S. Blanton) [USNM].

Variation. — The single paratype is slightly larger than the

type, measuring 6 mm. in length, fore wing 4 mm. The propodeum is darker than in the type, nearly black, while the abdomen is uniformly dark reddish-brown. There are no other noticeable differences, and head measurements are virtually the same as in the type.

UNASSIGNED FEMALES

The remaining five species are known from females only. In all probability some of these names will fall in synonymy when the sexes have been properly associated.

47. PSEUDISOBRACHIUM GIGAS new species

Holotype.—♀, Barro Colorado Island, Canal Zone, Sept. 1941 (J. Zetek) [USNM, no. 65156].

Description.—Length 6.5 mm., LH 1.4 mm., LT 2.4 mm. Head and thorax dark reddish-brown, almost piceous, abdomen dark reddish brown, blotched with paler brown, especially laterally and apically; mandibles light castaneous, teeth rufous; antennae bright castaneous, segments 3-12 with an apical annulus of dark brown; legs wholly bright castaneous; sting-palps yellowish. Mandibles with four strong teeth (Fig. 33). Clypeus with a strong median ridge which is continued past the truncate apical margin as a sharp median tooth. Head 1.15 X as long as wide; sides nearly parallel until just before posterior margin, where they are arcuately contracted; vertex straight across, occipital carina obsolete dorsally. Eye in form of a single distinct lens which is white and strongly contrasting to the brown head; eye larger than one of punctures of head. Head punctures strong, slightly longer than wide, rather evenly spaced, space between them, on the average, about 1-1.5 X greatest width of a puncture; space between punctures flat, polished, non-alutaceous and with no sculpturing whatever. Pronotum relatively flat, sides of disc rounded; disc 1.15 X as long as wide; pro- and mesonota shining, non-alutaceous, devoid of punctures medially but with sparse punctures laterally; mesopleura shining and with evenly spaced punctures. Propodeum with disc strongly shining, non-alutaceous, with a few punctures on the extreme sides, sides subcarinate; spiracles circular, directed dorso-laterad.

Paratype.—♀, Barro Colorado Island, Canal Zone, 29-31 March 1924 (J. C. Bradley) [CU].

Variation.—The paratype is remarkably similar to the type in size, color, and all structural details. The measurements presented for the type apply equally well to this specimen.

Remarks.—The male of this species must be a remarkably large *Pseudisobrachium* indeed. It will doubtless be found to have five-toothed mandibles and may well run to the *crassum* group in the keys presented here.

48. PSEUDISOBRACHIUM ZETEKI new species

Holotype.—♀, Barro Colorado Island, Canal Zone, July 1941 (J. Zetek) [USNM, no. 65157].

Description.—Length 3.6 mm., LH .75 mm., LT 1.4 mm. Head and thorax dark reddish-brown, abdomen yellowish-brown, each of basal five tergites with darker bands basally and apically; mandibles yellowish-brown, suffused with rufous basally and apically; antennae castaneous, flagellum fading to straw-yellow apically; legs bright yellowish-brown except front coxae brownish. Mandibles with four strong teeth, third tooth actually slightly smaller than basal tooth (Fig. 34). Clypeus with median ridge very strong, though not continued past the apical margin as a tooth. Head 1.3 X as long as wide; sides nearly parallel until just before posterior margin, where they are arcuately contracted; vertex straight across, occipital carina prominent on crest of vertex. Eye a single large amber-colored facet which contrasts moderately with the brown head. Punctures of head strong, anteriorly separated by no more than their own diameters, posteriorly more widely spaced, largely absent from center of upper front; surface between punctures very strongly polished, non-alutaceous. Pronotum less flattened than in *gigas*, rather slender; disc 1.28 X as long as wide; mesonotum 1.6 X as long as wide; propodeum 1.6 X as long as wide. Thoracic dorsum wholly strongly shining, non-alutaceous; punctures small, restricted to sides of nota and propodeal disc. Mesopleurum with sparse punctures, strongly shining except somewhat alutaceous below; sides of propodeum also somewhat alutaceous.

Remarks.—The male of this species may be *clypeatum* or, less probably, *rettenmeyeri* or *cooperi*. Another possibility is *superbum*, which also has a complete occipital carina, but only three-toothed mandibles.

49. PSEUDISOBRACHIUM MANNI new species

Holotype.—♀, Mixco,⁷ Guatemala, 24 May (W. M. Mann) [USNM, no. 65158].

⁷I have been unable to find this locality on maps available to me. There are two villages called Mixco, one in the central highlands in the state of Guatemala, one in the eastern lowlands in the state of Izabal.

Description. — Length 4.0 mm., LH .9 mm., LT 1.5 mm. Head black, thorax piceous, grading into black dorsally, abdomen ferrugino-castaneous; mandibles, clypeus, and scape bright castaneous, flagellum dull castaneous, apical segment yellowish; front coxae piceous, legs otherwise bright straw-yellow. Mandibles relatively slender, two apical teeth strong, third tooth slightly smaller and somewhat recessed, basal tooth small, much recessed (Fig. 35). Clypeus broadly truncate apically, median elevation strong but somewhat round-topped, smoothly declivous well before apical margin. Head 1.25 X as long as wide; sides nearly parallel, behind arcuately convergent to vertex, which is straight; occipital carina obsolescent dorsally. Eye a single large facet which is pale and strongly contrasting to the black head. Front with strong punctures except along midline; punctures anteriorly separated by less than their own diameters, laterally (around eyes) distinctly striatopunctate; punctures posteriorly slightly smaller, separated from one another by about their own diameters; surface of front between punctures strongly polished, non-alutaceous or very nearly so; under surface of head with strong, rather evenly spaced punctures. Pronotal disc 1.2 X as long as wide; mesonotum 1.6 X as long as wide; propodeum short, only 1.3 X as long as wide. Thoracic dorsum strongly shining, pronotum and propodeum weakly alutaceous posteriorly; pronotum with numerous punctures, well distributed but absent from midline; mesonotum and propodeum with punctures absent from broad median area. Mesopleurum alutaceous and with large, almost contiguous punctures. Sides of propodeum minutely alutaceo-striolate; propodeal spiracles subcircular, opening laterally.

Remarks. — The male of this striking form may possibly be a member of the *crassum* group such as *perpunctatum* or *dalmati*. On the other hand, the mandibles are more like those of supposed females of the *occidentale* and *obscurum* groups. However, no members of either of these groups are currently known from Guatemala.

50. PSEUDISOBRACHIUM PAUCIPUNCTATUM Fouts

Pseudisobrachium paucipunctata Fouts, 1928, Proc. Ent. Soc. Wash., 30: 122. [Type: ♀, Salt Lake, Utah, 13 June (USNM, no. 62549)].

Description of type. — Length 2.9 mm., LH .6 mm., LT 1.1 mm. Head and thorax castaneous, abdomen pale yellowish-brown; mandibles, clypeus, and scape light yellowish-brown, flagellum straw-colored; legs wholly straw-colored. Mandibles as figured

for *obscurum* (Fig. 36). Clypeus somewhat emarginate apically, median carina strong. Head 1.36 X as long as wide, sides slightly but perceptibly narrowed to just before posterior margin, where they are arcuately contracted to a broad, straight vertex; occipital carina obsolete dorsally. Eyes barely contrasting to front. Front moderately alutaceous anteriorly, more weakly so behind; punctures small, somewhat elongate, separated by about their own diameters except more sparse medially and posteriorly; under side of head alutaceous, weakly punctate. Pronotal disc 1.6 X as long as wide; mesonotum 1.7 X as long as wide; propodeum 1.6 X as long as wide. Pronotum shining, weakly alutaceous, punctures small and well separated, absent from median area; mesonotum shining, weakly alutaceous, with some weak lateral punctures. Propodeum wholly weakly alutaceous, somewhat shining, weakly punctate laterally; spiracles circular, directed dorso-laterad. Mesopleurum alutaceous, weakly punctate. Body and legs clothed with short, pale setae.

Other females. — CALIFORNIA: 1, Yucaipa, 11 May 1938 (peach orchard, Christenson) [USNM].

51. PSEUDISOBRACHIUM COSTARICANUM new species

Holotype. — ♀, Hamburg Farm, Santa Clara Prov., Costa Rica, 30 Sept. 1926, F. Nevermann) [USNM, no. 65388].

Description. — Length 3.4 mm., LH .82 mm., LT 1.4 mm. Head and thorax piceous, abdomen bright rufo-castaneous except segments more yellowish apically and laterally; mandibles yellowish, teeth rufous; scape bright yellowish, flagellum dull, pale yellowish-brown; front coxae reddish-brown, legs otherwise bright yellowish-brown. Mandibles slender, with three teeth, basal tooth large and projecting (Fig. 42). Clypeus with apical margin strongly emarginate, median ridge very strong and projecting as a small tooth over apical margin. Head 1.22 X as long as wide, sides slightly but perceptibly narrowed to just before posterior margin, where they are arcuately contracted to a broad, straight vertex; occipital carina obsolete dorsally. Eye consisting of a large, white facet which contrasts strongly to head color. Front strongly shining, non-alutaceous, with elongate punctures which are separated on posterior part by less than their own diameters (except more sparse medially), on anterior part separated by much less than their own diameters, on sides somewhat striato-punctate; under side of head shining, with punctures rather evenly spaced. Pronotal disc 1.4 X as long as

wide; mesonotum 1.5 X as long as wide; propodeum 1.4 X as long as wide. Dises of pro- and mesonota strongly polished, non-alutaceous over most of central area, with weak punctures which are largely absent from central area; disc of propodeum strongly polished, obscurely alutaceous behind. Sides of mesopleurum strongly alutaceous, weakly punctate. Body hairs pale, moderately long, those on the coxae and femora shorter than those on body and on apical parts of legs.

Paratype. — 1 ♀, same data as type [USNM].

Variation. — The paratype is somewhat smaller, length of body 3.1 mm., of head .7 mm., of thorax 1.2 mm. The head is a bit more slender, measuring 1.28 X as long as broad; the punctures are somewhat less crowded than in the type, especially anteriorly. In all other respects the paratype resembles the type very closely.

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